EDISON
Electric Institute
BULLETIN

CONVENTION NUMBER

JUNE, 1935

STATISTICAL DATA OF THE ELECTRIC LIGHT AND POWER INDUSTRY

Compiled Monthly by the Edison Electric Institute—Covers 100% of the Industry

DURING THE MONTH OF MARCH (Preliminary Report)

	1935	1934	%
Kilowatt-hours Generated* (Net)			
By Fuel	4,129,438,000	4,313,961,000	− 4.3
By Water Power	3,290,144,000	2,815,169,000	+16.9
Total Kilowatt-hours Generated	7,419,582,000	7,129,130,000	+ 4.1
Additions to Supply			
Energy Purchased from Other Sources	182,625,000	173,646,000	+ 5.2
Net International Imports	69,889,000	80,541,000	−13.2
Total	252,514,000	254,187,000	− 0.7
Deductions from Supply			
Energy used in Electric Railway Departments	52,729,000	64,844,000	−18.7
Energy used in Electric and Other Departments	118,801,000	120,241,000	− 1.2
Total	171,530,000	185,085,000	− 7.3
Total Energy for Distribution	**7,500,566,000**	**7,198,232,000**	**+ 4.2**
Energy Lost in Transmission, Distribution, etc.	**1,419,366,000**	**1,402,329,000**	**+ 1.2**
Kilowatt-hours Sold to Ultimate Consumers	**6,081,200,000**	**5,795,903,000**	**+ 4.9**
Sales to Ultimate Consumers (kw-hrs)			
Domestic Service	1,125,198,000	1,055,511,000	+ 6.6
Commercial—Small Light and Power (Retail)	1,120,059,000	1,046,303,000	+ 7.0
Commercial—Large Light and Power (Wholesale)	3,133,781,000	2,970,849,000	+ 5.5
Municipal Street Lighting	200,845,000	191,391,000	+ 4.9
Railroads—Street and Interurban	384,253,000	412,863,000	− 6.9
Railroads—Electrified Steam	66,840,000	66,041,000	+ 1.2
Municipal and Miscellaneous	50,224,000	52,945,000	− 5.1
Total Sales to Ultimate Consumers	6,081,200,000	5,795,903,000	+ 4.9
Total Revenue from Ultimate Consumers	$155,884,400	$149,780,400	+ 4.1

DURING TWELVE MONTHS ENDING MARCH 31st

Kilowatt-hours Generated* (net)			
By Fuel	53,258,015,000	50,069,063,000	+ 6.4
By Water Power	32,699,846,000	31,148,736,000	+ 5.0
Total Kilowatt-hours Generated	85,957,861,000	81,217,799,000	+ 5.8
Purchased Energy (net)	2,969,347,000	3,168,464,000	− 6.3
Energy Used in Electric Railway and Other Departments	1,989,256,000	1,937,457,000	+ 2.7
Total Energy for Distribution	**86,937,952,000**	**82,448,806,000**	**+ 5.4**
Energy Lost in Transmission, Distribution, etc.	**14,885,058,000**	**14,499,037,000**	**+ 2.7**
Kilowatt-hours Sold to Ultimate Consumers	**72,052,894,000**	**67,949,769,000**	**+ 6.0**
Total Revenue from Ultimate Consumers	**$1,858,818,000**	**$1,787,563,300**	**+ 4.0**
Important Factors			
Percent of Energy Generated by Waterpower	38.0%	38.4%	
Average Pounds of Coal per Kilowatt-hour	1.44#	1.45#	
Domestic Service (Residential Use)			
Average Annual Consumption per Customer (kw-hr)	639	608	+ 5.1
Average Revenue per kw-hr (Cents)	5.25¢	5.44¢	− 3.5
Average Monthly Bill per Domestic Customer	$2.80	$2.76	+ 1.4

BASIC INFORMATION AS OF MARCH 31st

Generating Capacity (kw)—Steam	23,769,800	23,983,200	
—Waterpower	8,952,500	9,004,800	
—Internal Combustion	500,500	470,700	
Total Generating Capacity in Kilowatts	33,222,800	33,458,700	
Number of Customers			
Farms in Eastern Area (Included with Domestic)	(534,907)	(506,861)	
Farms in Western Area (Included with Commercial—Large)	(211,027)	(205,805)	
Domestic Service	20,535,169	20,097,087	
Commercial—Small Light and Power	3,735,035	3,681,696	
Commercial—Large Light and Power	497,516	520,782	
Other Ultimate Consumers	71,265	67,865	
Total Ultimate Consumers	24,838,985	24,367,430	

* By courtesy of the U. S. Geological Survey with deductions for certain plants not considered Electric Light and Power Enterprises.

Vol. III, No. 6, EDISON ELECTRIC INSTITUTE BULLETIN; published monthly. Entered as second-class matter Aug. 17, 1933, at the post office at Philadelphia, Pa., under the act of March 3, 1879. Publication office, 56th and Chestnut Sts., Philadelphia, Pa. Editorial office, 420 Lexington Ave., New York, N. Y. Subscription rate, $2.00 per year in the United States; $3.00 per year in foreign countries.
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EDISON ELECTRIC INSTITUTE BULLETIN

Volume III JUNE, 1935 No. 6

The Institute's Third Convention

WITH a total registration of 1653 delegates and guests from all sections of the country, an unusually large proportion being the senior executives of the industry, the Institute's Third Annual Convention came to an end Wednesday night, June 5th, after three days filled with inspiring, stimulating and informative business sessions and informal meetings.

The splendid addresses and papers at the business sessions, the very evident harmony of thought regarding the major problems of the industry and the unity of purpose in meeting and solving them, engendered the most enthusiastic, confident and determined attitude in utility men that has been observed since the beginning of the depression.

The commercial prospects for the industry, particularly in regard to selling in all markets, economic and engineering aspects of utility operation, and what may be broadly classified as the several phases of the political aggression against the utilities were the predominating subjects both at the business sessions and in informal discussions among the delegates. As regards the meeting of political aggression by the utilities, the spirit of the Convention was well summed up by President McCarter when he said: "If the Government, however, is to persist in its attitude, it is up to the Industry to fight for its life. The kid glove stage has passed! So far as my own company is concerned—which fortunately is rather happily situated, as it is but a single integrated system—I will stand upon the bridge to the end and go down if need be. But our ship will not sink and neither will yours. Justice and truth are upon our side, and the right will prevail. Therefore be of Good Cheer!"

The officers of the Institute, headed by President McCarter, who guided the organization during the past year, were all re-elected to their former posts with the exception of Vice-President Hagenah, who became a member of the Board of Trustees. Mr. Hagenah was succeeded as Vice-President by Mr. James E. Davidson, President of the Nebraska Power Company. In addition to Mr. Hagenah, three other new members of the Board were elected, these being Messrs. Alfred H. Schoellkopf, Niagara Hudson Power Corpn.; P. H. Gadsden, The United Gas Improvement Company, and E. W. Wakelee, Public Service Electric & Gas Company.

All meetings were at the Traymore Hotel, the headquarters of the Convention. Five regular sessions were held, and one special session on Tuesday afternoon, at which several motion pictures were presented, including one produced by the Philadelphia Electric Company depicting the adventure of Reddy-Kilowatt, the symbolic figure used by that and other companies in their advertising, and another by the General Electric Company showing latest advancements in the electrified kitchen.

Meetings of the Board of Trustees and of the Operating, the Sales, the Insurance and the Statistical Committees and the Electric Kitchen Bureau were also held. Social events included a dance every evening at the Traymore, and a party at the Seaview Golf Club on Monday afternoon for the ladies attending the Convention. The Atlantic City Electric Company added much to the successful running of the Convention through its contribution of personnel in the handling of Convention details.

The opening session, on Monday morning, June 3rd, was devoted exclusively to the commercial program of the industry. The speakers were H. P. J. Steinmetz, Chairman of the Sales Committee; C. E. Michel, Sales Manager of the Union Electric Light and Power Company, St. Louis; G. C. Estill, President, Florida Power and Light Company, Miami, Fla.; M. J. Julian, President, Better Vision Bureau; P. B. Zimmerman, Head of Appliance Division,

OFFICERS OF THE INSTITUTE 1935-1936

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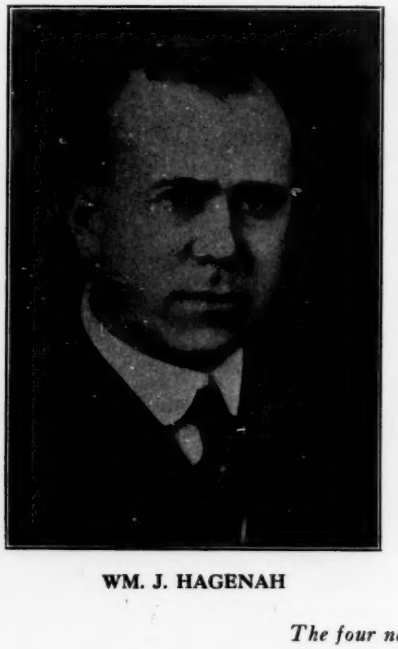
RESOLUTION OF THE BOARD OF TRUSTEES

At Atlantic City Convention

RESOLVED, that the Board of Trustees of the Edison Electric Institute recommend to its member companies to continue to maintain their present hours and wages for employees.



WM. J. HAGENAH

JAMES E. DAVIDSON

ALFRED H. SCHOELLKOPF

The four new Trustees of the Institute, elected at the Convention, and Mr. Davidson, newly elected Vice-President

General Electric Company, Cleveland, Ohio, and Samuel G. Hibben, Director of Applied Lighting, Westinghouse Lamp Company, Bloomfield, N. J.

Mr. Steinmetz told of the splendid work of the Sales Committee. Messrs. Michel and Estill cited samples of selling on their properties that were astonishing in magnitude. Mr. Zimmerman urged concentration on the electric kitchen and cited customer-appeals as well as utility benefits. Mr. Hibben talked of the sales possibilities of the new vapor illuminants.

The papers given at this session will be published in complete form in the July issue of the BULLETIN, as will those of Messrs. Jo C. Guild, President of the Tennessee Electric Power Company; N. E. Funk, of the Philadelphia Electric Company; Marion Penn, of the Public Service Electric and Gas Company, Newark (together with their dis-

(Continued on page 208)

P. H. GADSDEN

With Courage and Confidence

THE Edison Electric Institute at Atlantic City this week marked a turning point in utility affairs. It was a stimulating tonic to all in attendance. It was a morale builder. For the industry was vital in attitude and action. It took two definite stands. One was to fight to the last against the persecutors of the industry who are now known. Their purpose to destroy private utility enterprise is without disguise. The other was to go after business and expand electric service in all markets. Both actions are to be intelligent, organized and effective. As so aptly put by President McCarter, "the kid glove stage has passed." . . .

There was hope and victory in the atmosphere. There was a revival of good cheer. Courageous action has its being in the morale and spirit so evident at this meeting. Leadership has come to the front. . . .

The industry has gone to work to expand and perfect its organization and its functions. It has left its trenches and is carrying the fight to the enemy. It has regained faith in itself and in the ultimate victory of truth and justice. It has become again an industry of action. This meeting deserves to be underscored in the book that records outstanding milestones in the history of the utilities. President McCarter truly said "be of good cheer." It was the dawn of a new day in industry affairs.—*Electrical World.*

E. W. WAKELEE

The President's Address

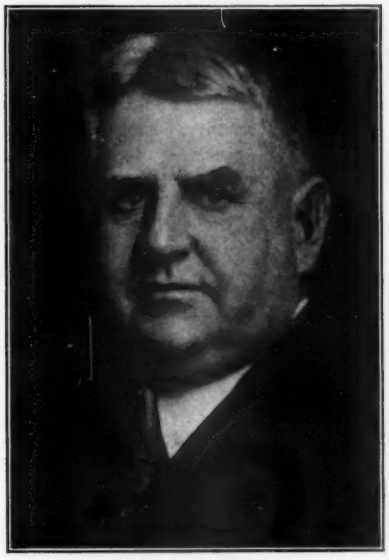
By Thomas N. McCarter
President, Edison Electric Institute

Address before the Third Annual Convention of the Edison Electric Institute, Atlantic City, N. J., Tuesday morning, June 4th, 1935

I GREET you, ladies and gentlemen of the Institute, with fraternal regard.

We are assembled in annual convention under the most difficult of circumstances, due to the pending situation at Washington. It is, however, a time for courage and determination on the part of the industry, in which there is no place for faint-heartedness or despair. The unexampled record and development of this industry must be continued. It has fifty years of glorious history behind it. Starting from scratch a little more than a half century ago, there has been poured into it a bona fide investment of some twelve or thirteen billions of dollars of the savings of the people of the country. It has built up a gross business of approximately $1,800,000,000, a year. It is giving wonderful service to the nation, at marvelously low rates. It is one of the major industries of the country, ranking fourth in the amount of investment in it, and eleventh in the value of its annual product.

Since the present national administration was inducted into office, there has been launched by it against this industry, the most devastating and destructive attack, having for its object the end of private operation of the electric industry, and its nationalization under Federal direction and ultimate ownership. One step has followed another. In the early days of the present administration, the provision in the Revenue Act of 1932, providing for a 3 per cent tax on domestic consumers' bills, to be paid by consumers, was transferred to the backs of the companies rendering the service, thus adding to the extraordinary burden of taxation now imposed upon our companies, which in the case of the one with which I am especially familiar, aggregates 17 per cent of its gross receipts. Subsequently the so-called Johnson Bill was passed, denying to this industry, and to this industry alone, the use of the Federal courts as a forum of original jurisdiction, to review orders alleged to fix confiscatory rates, and



MR. McCARTER

therefore to be in violation of the Federal constitution.

On April 19, 1934, President Roosevelt signed a joint resolution, authorizing funds to enable the Federal Power Commission to conduct a nation-wide investigation of power rates. This proposed investigation was to be in addition to that which the Federal Trade Commission has been carrying on over a period of years.

These matters, serious as they are, were only curtain-raisers to what has followed.

It should be said in fairness, that this administration is not chargeable with the great Boulder Dam development authorized and started under the previous administration. A vast number of people in this country, who look with apprehension upon all Government undertakings of this character, have many misgivings as to the results that will flow from this enormous enterprise. But, at least, it can be said that there were serious questions other than the development of electric power that were involved in this project, as for example —the impounding of the waters of the Colorado River for vast irrigation and water-supply projects, to which the development of power was largely incidental. The surplus power made available by the undertaking, not needed for the enterprise itself, is to be sold to large adjacent private distributors. Inspired by the determination of the Government to undertake this enterprise, the new administration burst forth with all kinds of similar enterprises in various sections of the country, which, however, are lacking in the fundamental main purposes which the Supreme Court found justified the Boulder Dam experiment.

The development of the monstrous TVA project and the setting-up of the Tennessee Valley Authority came into being. Here, starting with the old Muscle Shoals project as a basis, is an attempt, under assumed authority of law, to harness all the waters of the Tennessee River and as a result thereof, to produce an enormous quantity of power, available for use in a region now largely over-supplied with power, with the avowed intention of creating under false bases of accounting, a so-called yardstick of cost of power, which could be accepted by surrounding companies, or, in default thereof, they would be driven out of business. And this same yardstick was to be held up to the people all over the land as a proper measure of the cost of power. The money spent by the Government in the development of this undertaking has already exceeded over $100,000,000, an amount largely in excess of that thus far appropriated. And it was made perfectly apparent at a recent hearing before the Military Affairs Committee of the House of Representatives upon the proposed amendments to this legislation, that the Tennessee Valley Authority has proceeded unlawfully and arrogantly and in contravention of the accounting practices of the Comptroller-General's department, to indulge in activities and spend large sums of money altogether unauthorized by law. More or less similar projects have been undertaken by

the Government in the Northwest, such as the Bonneville Dam and Grand Coulee Dam on the Columbia River—not to mention such other projects as Fort Peck, Casper-Alcova, and Passamaquoddy—the total estimated cost to the Government of which, including Boulder Dam, is approximately $730,000,000. Heaven only knows what the total actual cost will be if and when they are all completed.

The next step aimed at the destruction of this industry was the attempt, under the Public Works Administration of funds appropriated by Congress to bring about national recovery, to make outright gifts to scattered municipalities of 30 per cent of the cost of a new municipal plant, together with a loan of the balance of said cost, at low rates of interest, said plants, when completed, to operate in direct competition with existing facilities operated by private capital.

Now the Edison Electric Institute is not a political organization. It is the trade association of the industry. It is a factual, fact-finding research organization, existing for the benefit of its members and the industry in general. When, however, the trustees of this body became fully cognizant of the foregoing facts, it resolved that the time had come for it to act. They believed that some of the various undertakings above referred to were in violation of the constitutional powers of the United States Government, and they authorized the employment of the best legal talent that could be secured, to advise the Institute as to the constitutionality thereof. Accordingly the Honorable Newton D. Baker of Cleveland, Ohio, formerly Secretary of War; and the Honorable James M. Beck of Washington, D. C., formerly Solicitor-General of the United States, both constitutional lawyers of national reputation, were retained. These gentlemen, after exhaustive study, united in a series of joint opinions, in which they held substantially as follows:

1st. That the 3 per cent Tax Act was constitutional.

2nd. That the Johnson Act was constitutional.

3rd. That the undertakings of the Tennessee Valley Authority, as authorized by Congress and as, in process of time, carried out by the Tennessee Valley Authority, were beyond the powers of Congress, and in defiance of the constitution of the United States.

4th. That the undertaking of the Government to make gifts of money and to advance on loan the balance of the cost of municipal plants in competition with legally existing private industry was unconstitutional.

Meanwhile, there had been commenced by preferred stockholders of the Alabama Power Company, whose property was threatened with destruction by the TVA development, a suit in the Federal courts to test the constitutionality of this undertaking. Almost simultaneously with rendition of the Baker-Beck opinions came the decision of the Honorable W. I. Grubb, Judge of the Federal Court in Alabama, that the activities of the Tennessee Valley Authority were altogether illegal.

At this juncture, backed by the authority of the trustees of the Institute, I presented, in person, to the President of the United States, a dignified memorial, setting forth the facts that seemed to the trustees to threaten the existence of this industry and appealed to the Government for a cessation of this competition, and a get-together policy for the elimination of whatever abuses and wrongs might be found to exist. I accomplished nothing. On the contrary, I was rebuffed by a public statement issued the following day by the chairman of the Federal Power Commission. Meanwhile, statement after statement began to be issued from this or that Federal commission, attacking the practices of the industry, putting out all kinds of false innuendoes, and indulging in a general policy of propaganda against the industry, which, if practiced by the companies in their own defense, would have brought down the severest censure of the Government upon it.

The methods and practices of the Federal Trade Commission in conducting its investigation, and the various kinds of propaganda engaged in by it, were fully described to you yesterday by Mr. Weadock, who has been in constant close touch with this investigation from the beginning. He discloses a scandalous perversion of the proper activities of a quasi-judicial tribunal.

Various other litigations have been started in different sections of the country where these gifts and grants, to which I have referred, have been made; and in nearly every case, the undertaking has been enjoined in the Federal Court of original jurisdiction. The appeal from Judge Grubb's decision in the Alabama Power Company case will be argued about the middle of June before the Circuit Court of Appeals in that section of the country, and it should reach the Supreme Court of the United States at some time during the next sitting of that court. The trustees of the Institute are prepared to do whatever is necessary to see that this case, and the other injunction cases to which I have referred, receive a full, complete and fair hearing before the courts of appellate jurisdiction.

Now one would think that all this was sufficient to administer a knock-out potion to any industry! But such is not the case. The industry has gone on about its business; is continuing to give the country the best of service at constantly lessening rates, and is increasing its customers and gross revenues. With the desire to be cooperative and helpful in stimulating national recovery, although not operating under a code, the industry with practical unanimity accepted the forty-hour week for labor without diminution of wages, at enormous cost to itself. Now, under the decision of the Supreme Court of the United States, as has from the beginning been anticipated by all thoughtful lawyers, this compulsory code operation, where it exists, and the whole NRA project has been ended. As above stated, our compliance was voluntary, and I strongly recommend to the industry that this voluntary compliance be continued, to the end that the industry may continue to practice whatever benefits there were in this plan, which has now been declared illegal.

But the worst was yet to come! As its final weapon of annihilation, the administration produced, through the efforts of Messrs. Corcoran and Cohen (who seem to be running the United States these days), and caused to be introduced in both Houses, the Wheeler-Rayburn Bills, known ineptly as the "Holding Company Bill." These two bills as introduced in the respective Houses, though differing somewhat in phraseology are alike in substance. Title I imposes a death sentence upon holding companies and provides for their destruction within a limited period of time, unless by the action of the new Securities Commission, under certain exceptional circumstances, this or that company should be exempted from the death sentence. And in the meantime it places full control of these holding companies under the control of this commission, as to the issuance of securities, accounting; and practically all other details of operation. How any such contemplated creation of power in a Federal commission can survive the logic and reasoning of the decision in the NRA

case is beyond my comprehension. In fact, the President himself has stated that in his opinion the NRA decision endangers, if it does not destroy, the whole Securities Commission legislation. Irrespective of its effect upon our industry or any other particular industry, it seems to me that this great decision is nation-saving, for after all, we are American before we are specialized industrialists.

It has been part of the strategy of the administration to gloss over or minimize the effect of Title II in these bills. And I think the industry itself has not given to this title the importance and publicity which it required. If anything, it is to my mind more dangerous than Title I. Everyone who is familiar with the electric business knows that the operating companies in this industry are almost altogether intrastate operating units. For purposes of security of service, economy of plant construction, and what not, they have, however, established certain interstate connections with companies existing in neighboring states, over which small amounts of power pass from time to time, from one company to the other, but such movements are in no sense a matter of retail distribution. Under the guise of this trifling interstate commerce, Title II seeks to place all these companies under the direct supervision and management of the Federal Power Commission, except as to rates over retail distribution. But every other conceivable power that could be given to a regulating commission is bestowed in such cases upon the Federal Power Commission, notwithstanding that it is a complete duplication of the power of the various State commissions. And the bill states in so many words that the local regulation must be subject to the Federal regulation. The practical result of this would be to subject the industry to the most minute control of a vast Federal bureaucracy, to be exercised (if the present personnel of the Federal Power Commission is a fair criterion) by wholly incompetent persons, altogether unfamiliar with, and ignorant of the intricacies of the public utility business. It would mean the end of State regulation.

In view of the decisions of the Supreme Court of the United States with regard to interstate commerce, over a long period of years, culminating in the recent exhaustive opinion of Chief Justice Hughes in the NRA case, I have no hesitancy in predicting that Title II of this Act, should it be passed in anything like its present form, will be declared invalid by the Supreme Court of the United States, except as to supervision of and regulation over the relatively infinitesimal amount of current that actually passes over State lines. If, however, the bill should be passed in its present form and be sustained by the courts, sooner or later, it will be an end to the private operation of this industry.

Hearings have been held on the bill before the Interstate Commerce Committee of the House. The hearings were long-continued and fair, and I am satisfied that the majority of that committee are not in favor of the sweeping provisions of the bill as drawn.

Hearings in the Senate Committee were hurried and perfunctory, and the bill was immediately reported out by Senator Wheeler and some of his associates. There is, however, a strong minority report filed in opposition to its enactment. An attempt has been made by those in control of the bill to give the impression that the committee substitute bill in the Senate is very much modified. This is not the fact. Certain changes in language have been made, but the vicious parts of the original bill remain in all their entirety.

In its opposition to this proposed legislation, the industry has been splendidly represented in Washington by the voluntary Committee of Public Utility Executives, under the chairmanship of Mr. Gadsden. Its work has been honest, clean, straightforward and effective, and the Institute and all connected with the industry are under a sense of obligation to this committee for its splendid presentation of the industry's objections to this

(Continued on page 228)

CHARACTER

By George B. Cortelyou

Past-president of the Edison Electric Institute

Remarks Made at the Closing Session of the Convention

MR. McCARTER, associates in the Institute, ladies and gentlemen: First of all, let me express to you, President McCarter, my profound appreciation of what you have been good enough to say. And now let me express also the pleasure I have felt in the meeting you have had here in Atlantic City this year. It has been a matter of the greatest interest to me that you have had such a demonstration here, that you have had an attendance greatly in excess of anything that you expected, and that the meeting has been marked by the enthusiasm and the interest that have characterized it.

Now anything I might say at this stage of the evening, following the splendid tribute you gave President McCarter, would almost seem to be an anti-climax. A well-known writer has said that it sometimes shows a fine command of language to say nothing. I confess that I aspire in a modest way to a distinction of that sort.

As I have sat here today I have noted the character of the meeting and the character of the addresses. In an industry, just as in an individual, character still counts, and it is the character of this great industry, built up over a long series of years, that will count in the future and make for its success despite the obstacles that have been put in its path.

I was interested a few days ago in reading that remarkable letter, the last letter written by Lawrence of Arabia to his old classmate and biographer, Robert Graves. There was one sentence that especially attracted my attention. In it he said, "I have convinced myself that progress today is not made by a single genius, but by a common effort."

Progress will continue to be made in this industry by a common effort, and there must be here in the Institute, back of its activities, backing up its management, a common effort; and through the Institute, on through the industry, there must be this evidence of common effort. With that effort, with the sinking of all minor differences, with a hearty support of the Institute and the leaders of the industry, we will overcome the embarrassments of the present, and fortified by the great achievements of the industry in the past we will go on to an enlargement of its influence among the people.

One final word: In one of the addresses today it was said, and I think truly, that while we have done a good job in the extension of rural electrification, we have done a rather poor job in telling the truth about it to the people. I wonder if that isn't one of our present and future problems, that we shall to a much greater extent bend our energies to acquainting the public we serve with the truth about the Electric Industry.

Rural Electrification

By Hudson W. Reed

Management Engineer, The United Gas Improvement Company, Philadelphia, Pa.

An address before the Fourth General Session of the Third Annual Convention of the Edison Electric Institute, Atlantic City, N. J., June 5, 1935

ALMOST overnight, rural electrification has become a subject of national interest. This is because it has been made a part of the 1935 Federal Works program.

While not the largest, it is one of the few concrete and specifically defined projects. It is regrettable that the subject is not better understood by the general public. Indeed, such is the confusion of thought concerning its possibilities that even in the electric power industry its definite limitations are not always realized. This confusion, extending to the value of electrification, the costs involved, and its importance in opening up a future market for electric sales, arises from the diverse viewpoints of those who have taken up the cause. To those interested only in reemployment, it means the indiscriminate building of new lines, without regard to the use to which they can be put. To the professional friend of the farmer, it is a political expedient, by means of which he hopes to be remembered by his rural constituency. To those who have set out with the best of intentions to revolutionize living conditions in rural areas, it means the use of electricity for every conceivable purpose, preferably at a cost below that of other fuels, and with little regard for the economies of the problem.

Note that this clamor has not been initiated by the farmer himself. Only in the imagination of these, his champions, does there exist any widespread demand for electric service on the farm, or any general willingness, or ability, to pay for it.

In consequence, all manner of impractical and costly electrification schemes have been advanced. The possibilities of the market are vastly exaggerated; the costs of supplying it are minimized; and no attempt appears to have been made to correlate the practical uses of electricity with all the expenses involved in satisfying them, such as the construction of lines, the wiring of homes, the purchase of appliances, and the actual cost of supplying the service.

The responsibility for introducing a little clarity into the discussion falls on those of us in the industry who have long studied this problem, and have actually lived with it. The time has come when it is necessary to state the facts about this much discussed, but little understood problem—to stop making it a football of politics—to refute the misstatements as to its unlimited possibilities—and to point out its practical limitations.

MR. REED

Progress of the Power Industry

It suits the purpose of many of the professional friends of the farmer to discredit the progress thus far made by the utilities, but we have no reason to be ashamed of our record. Indeed, were there a more general understanding of the problem, its practical limitations could be used to show that the utilities have proceeded as rapidly as warranted by economic conditions and the actual demand for such service.

It can be stated without qualification that, considering the low density of rural prospects and their limited buying power, the electric industry has done a magnificent job in attaching three quarters of a million farm and over two million non-farm customers to its rural lines. Holding these customers during the present depression is evidence of salesmanship of the highest order. It can further be stated without fear of contradiction that the electric industry has taken more than its share of risks and has incurred more than its share of promotional and operating losses, in an effort to improve living conditions on the farm.

The extent of the progress made by the utilities in electrifying rural districts, is also misrepresented. In calculating this progress, non-farms in the rural areas must be included as well as farms. It has been customary for those who wish to belittle our accomplishment in this field, to state that rural electrification is less than 12 per cent completed. This is an understatement of fact, because it applies to farms only. Including non-farms, 25 per cent of our rural population are connected to central station service, and 31 per cent have the service available. Using the United States Census Bureau's definition of rural territories—that is, communities with less than 2500 population—more than 35 per cent are now served, and 40 per cent have service available. Compared with the progress made by the publicly-owned municipal plants which selfishly refuse to extend their lines to serve the unprofitable rural market, our record is indeed outstanding. There still remain more than a million non-farms and five million farms located in districts not reached by present central station rural lines. Only a small percentage of this number can be considered as potential customers, not because of any conspiracy on the part of the utilities, but because of low density and adverse economic conditions.

That as many as 12 per cent of our farms have been connected to central station service is due to the preponderance of non-farm residents in areas where most rural lines have been built. Rural territories where non-farm homes prevail are now generally served. In the future, instead of the present ratio of three non-farm to one farm cus-

tomer, the most promising territories show but one and one-half non-farms to each farm. The present ratio of all unserved non-farms to farms is one to three and one-half, showing clearly that the investment in future rural lines must be carried more and more by the farm customers themselves. Non-farm customers, as a source of substantial contribution to the construction and operating costs of rural lines, will in the future be of small consequence.

Federal Program

So much for the progress that has been made. We are the first to admit that there is much yet to be done in carrying out the policy of the industry, which may be stated as follows: To aim towards the fullest degree of electrification consistent first, with the actual savings derivable from electrically performed farm operations; and, second, with the customer's ability to pay for the more convenient but more costly operation of electrical household appliances.

The orderly progress of the industry toward this goal is to be supplemented by the efforts of the national government. Rural electrification has become part of the federal works program. How efficiently the funds allocated for this purpose will be administered will depend in a large measure upon the extent to which those in charge of its administration, and who we believe understand the problem, will be free from political interference. The administration of the project could vary from a carefully planned program, to the wholesale, indiscriminate building of lines before the prospective customers have even signified their intention to use the service should it be made available. The possibility of an unsystematic extension of electric service to the farm warrants serious consideration.

The present appropriation of one hundred million dollars is in itself a huge sum. This earmarked allotment can be greatly increased at the will of the administration. In addition to the amount made available through the relief measure, additional sums required for financing the new customers for wiring and appliances will be advanced by other federal agencies. It will certainly behoove the electric industry to bend every effort to the end that such vast sums are spent not merely for experimentation or work relief, but in a manner that will provide practical and permanent benefits for our rural inhabitants.

There is no question as to the industry cooperating to the fullest extent with the Rural Electrification Administration. Assurance has been given to the Administrator that it will make every possible effort and sacrifice to further this desirable social program. In doing so, however, the industry should know how far it can proceed on its own, or federal capital, consistent with sound business practice. Beyond that point the problem is a social one and must be treated as such.

An Analysis of the Farm Market

Let us analyze our possible market. Farms in this country have a density of 2.06 per mile of road. Eliminating those farms now served, averaging 3.3 per mile, there remain 5,500,000 farms located on 3,000,000 miles of road, a density of 1.8 per mile. With the present low average of farm income, the electrification of all farms, desirable as this may be from a social viewpoint, is clearly an economic impossibility.

Limitations. Here are some further practical limitations to serving any appreciable market:

Forty per cent of all farms are tenant-operated. Even with the lowest reasonable cost of electric service and the most liberal financing on the part of the federal government for wiring and the purchase of appliances, it will be extremely difficult to induce this group to invest its own money for electric service in temporary homes. A much greater demand for wired tenant farms must be created before this condition will materially improve.

Almost fifty per cent of all farms are mortgaged. With farm earnings far below normal, the saddling of an additional debt burden on this group—unless it increases their earning capacity, is impractical at the present time.

The average farm earnings in 1933 were $400; for 1934 they were about $500. The appliances to be purchased and the extent of their use must be governed by the amount of money available. If, through the use of electricity, farm productivity could be increased enough to offset the investment in the appliances, and their cost of operation, the picture would be different, but as will be shown, such farms are few in number. Our problem then is to:

First, determine those areas where farm density is great enough to make the construction of new lines feasible, even though not immediately profitable;

Second, locate such owners as are able to finance the wiring of buildings and the purchase of appliances necessary for full home electrification; and

Third, develop the means of selling electric service to these farm owners, in competition with improved farm machinery, telephones, automobiles, and other desirable commodities or services.

Notwithstanding the social value of electric service on every farm, there is no more reason to expect the utilities to make impracticable line extensions than to expect governmental agencies to extend sewer and water lines into such territories. Unquestionably, each of these services has great social value. There is, however, no hue and cry for them. Why? Because the losses incurred by such service must necessarily be borne by state or municipal authorities, and this would eliminate their political value. Neither is there any more justification to expect the utilities to assume increasing losses in serving rural customers than to expect the vendors of other services or commodities to follow a similar procedure merely to be of social service to the farmer.

To bring together the factor of need for electric service, and the cost of supplying it, we must consider the prospects for its use on the preponderant number of what may be called normal farms, not the few exceptions which use a large amount of energy in farm operations.

The general uses of electricity on the normal farm may be stated as:

First—lighting for house and other buildings.
Second—pumping for house and farm operations.
Third—farm operations.
Fourth—household appliances.

The most general demand for electricity on the farm is for lighting in the home and other buildings. The hours of use for this purpose are quite few, limiting consumption to 15 or 20 kwhr per month. Pumping water is not essential to every farm, since gravity flow and windmills cut down considerably the number of pumping prospects. The general average for all unserved farms for pumping would probably not exceed 15 kwhr per month. Thus, consumption for lighting and pumping together for all unserved normal farms will not exceed 35 kwhr per month—an insufficient amount to justify general line extensions when unserved farms show a national average of less than two per mile.

There are several types of farms where large quantities of electric energy can be used to advantage in farm operations:

Poultry farms.
Dairy farms, where cooling of milk is necessary for retail sale.
Fruit farms, where pumping for irrigation may be essential, and
Truck farms, where pumping for irrigation is sometimes profitable.

These farms comprise less than 10 per cent of all farms, or less than the total farms now served. Thus, on 90

per cent of all farms, electric energy is of little use for farm operations, except for lighting and pumping of water.

The predominant part of farm labor cannot be performed electrically because electrical machinery for this purpose is quite limited. The horse and tractor are still the main sources of power, and are likely to retain their position for some time to come. Revenue from farm service must, therefore, be derived primarily from the use of the major household appliances.

Granted that electricity in the farm home has many advantages, it cannot, no matter how reasonably priced, compete in cost with such fuels as oil, coal, and wood. Moreover, at the outset, its use requires costly new facilities and appliances. Its advantages lie only in labor saving, comfort, and sanitation. To secure these conveniences, either farm income must be materially increased, or other essential comforts of life sacrificed. I do not question the social value of electricity in every house; I only make a statement of fact.

We have, then a potential use, on the average farm, little higher than that of a small home in the city, where the density may be more than 100 customers per mile, as against one to four per mile in the rural areas. Consequently, at any rates at all commensurate with the cost of service, the electrified farm home will continue to be a luxury.

If the foregoing conditions were otherwise, a much greater number of farmers already would have contracted for electric service because they, of all classes, have been forced to recognize the value of economy.

Costs of Rural Service. In an effort to minimize this cost feature, some proponents of rural electrification make the claim that some type of substandard construction can be used on rural lines which will make their cost only a fraction of the normal distribution line cost. To the extent that there is possible any substantial saving from this source, this claim is fallacious. In rural sections, continuity of electric service is vitally necessary. The more extensive the use of electricity on the farm, the greater the service requirements. The physical facilities for serving farm customers must, therefore, be of a substantial type if farm electrification is to be further promoted. There is a minimum cost for constructing distribution lines, if it is desired to attain the lowest possible over-all cost, coupled with satisfactory service. Below this minimum, operating and maintenance costs vary inversely with construction cost.

Despite frequent statements to the contrary, there is no mystery regarding construction cost of rural lines, even though it may vary in different sections and under different conditions, from $600 to $3,000 per mile. Either extreme can be justified. Contrary to general opinion, distribution engineers have made as much progress in simplifying and standardizing distribution costs and construction as has been made in generation.

To go into the various types and costs of constructing rural lines would be an endless task, but the discussion of our problem would not be complete were we to omit an example of the cost of rural service. Let it be understood that there is no such thing as a standard cost for rural lines. The closest we can approach such a condition is by stating what might be termed normal costs. To avoid possible criticism of high costs, we will assume minimum investment and operating costs in our calculations. The figures given should not be construed as standard costs, for any company, but are used for illustrative purposes only.

To simplify the illustration, costs are broken down into three components:

First, fixed cost, that is, interest on investment, an adequate depreciation reserve, taxes, and insurance on the distribution facilities required for rural service;

Second, the incremental distributing expense, which includes the expense incurred for operating and maintaining the distribution lines; the promotion of appliance sales; customer accounting, including meter reading, billing, and collections; free service to the consumers, such as instructions in the use of appliances, replacing of fuses, servicing of appliances, etc.; and administrative expense and

Third, the cost of energy delivered at the customers' meters.

Assuming the cost of money for investment in new facilities at six, depreciation at three, and taxes and insurance at 2½ per cent, the total fixed charges on the investment will be 11½ per cent per year.

Assuming an investment of $1,000 per mile of straight line, under normal conditions, and $110 per customer for meter, service, and transformer, the total investment per mile, exclusive of any share of the cost of tie or transmission lines, would be $1,330 for three customers per mile. The fixed cost, at 11½ per cent, would be $153.

A conservative estimate for distributing expense would be:

Distribution	$ 77
Commercial	12
New Business	12
Utilization	6
Administrative	9
TOTAL	$116

Should there be any adverse comment on the cost given for the operation and maintenance of distribution lines, it can be shown that the figures quoted are, if anything, too low. If I had applied the cost factors arrived at by the engineers of the New York Power Authority for urban communities, a cost of approximately $60 would have resulted, instead of $77; whereas the actual cost differential between urban and rural lines is probably nearer 50 per cent than the 30 per cent here used.

Without giving any consideration to load factor or additional substation facilities, tie and transmission lines that may be required, we have assumed as the energy cost at the customer's meter, one cent per kilowatthour.

Applying this unit cost to the present eastern farm use of 800 kwhr per annum, a total energy cost of $24 results.

Again we caution not to use this figure as an actual cost; it is illustrative only.

Summarizing the total expense involved for three customers per mile of line, we have:

Fixed Charges	$153
Cost of Distributing	116
Cost of Energy	24
	$293
Cost Per Customer	$ 97.37

Under no stretch of the imagination is it conceivable that with the present normal farm use east of the Mississippi of less than 800 kwhr yearly can rural lines be made to pay their way at the rates we are expected to offer. Greater consumption is the only answer to a lower unit cost. The great handicap, then, is not so much what can be accomplished through lower construction costs, or rates, as it is the inability of rural inhabitants to purchase the high consumption appliances necessary to make the extension of lines feasible.

Summary. Summarizing the factors which have an important bearing on the estimate of new consumers, we find that:

First, in the most promising sections of the country, the density of new farm prospects is only 2.2 per mile of line;

Second, most of the farms now served are located in the populous rural sections. This group contains a large portion of dairy,

poultry, and produce farms, the operation of which will permit the most profitable use of electricity in farm operation;

Third, the large number of non-farm homes in many instances have made the present lines possible; future extensions must depend more and more on the farm load alone;

Fourth, the cost of wiring and the appliances necessary to make the line feasible, would amount to approximately eight times the annual bill for energy, and the cost of service in itself would take a large share of the farmer's cash income;

Fifth; the general belief that farm electric service, like rural telephone service, can be of a sub-standard type, is fallacious; and

Sixth, there is a time element which must be considered in an attempt to change the life-long habits of any class of people. It required thirty-five years for electricity to supplant gas for house-lighting, and fifteen years to connect approximately eleven per cent of our farms to central station service.

Past extensions, then, should not be taken as the only criterion for the practicability of constructing new lines. Future extensions should be made with a full realization of the cost of construction, cost of wiring and appliances, the cost of service, and the farmer's financial limitations.

The Survey. There is only one correct way to determine the number of potential farm customers, and that is through the national survey that the industry is having made by those who have lived with the problem for years. Such a national study has never been made. There was, however, a survey made by the industry during the early part of this year in sections containing over a million farms. This survey shed considerable light on the whole subject, particularly on the limitations to the number of prospects, above outlined.

Taking the results of this study and projecting it to cover the entire country, it would indicate that this year, lines reaching 200,000 new farm customers could be built, providing it is possible to finance the cost of the lines and the cost of the wiring and appliances on long term payments, at low interest rates. In addition to the 200,000 farms it should be possible to serve from the same lines 300,000 non-farm customers. This would be a notable increase to the present number of rural customers, even if a small percentage of those not served. We doubt if the national survey will develop more than the 500,000 customers we have indicated, as the extent of your rural prospects in 1935. This program involves a total expenditure of between three and four hundred million dollars, about equally divided between the facilities furnished by the utilities and those furnished by the consumers.

Conclusions

In pointing out the limitations of the rural load, I do not mean to infer that there is nothing more for the industry to do. Expansion must go on even though this class of service cannot at first pay its fair share of the cost. The electric industry has reached its present enviable position through the pioneering spirit of building ahead of the times. To do otherwise would cause it to stand still—the first indication of retrogression.

We all know that the industry will carry its portion of the burden to the extent that it is financially possible. Beyond that point, the degree to which the required social rate can be extended will depend largely upon the cooperation of your regulatory agencies. Neither governmentally nor privately financed lines in most rural districts not now served can be made to pay their way. If there is to be a more general building of rural lines than I have indicated, it must be on the premise that the regulatory agencies understand this social problem so that the return from other classes of service will not be reduced to a point which will hamstring the industry in its pioneering work. Otherwise, our sacrifices will produce few results.

The problem is not a simple one. It has many ramifications which are beyond the power of the utilities to ferret out themselves. It can not be solved by scientific cost allocations or scientific rate structure, because it is primarily a social problem.

We have been asked to cooperate with the national program. Every concession possible should be made, but in making them there should be a complete understanding and regard for all of the factors involved. Otherwise, serious consequences might be incurred.

Discussion of Mr. Reed's Paper

By Colonel William Kelly

President, Buffalo, Niagara and Eastern Power Corporation, Buffalo, N. Y.

MR. REED has condensed into brief form a great mass of facts and conclusions on Rural Electrification. His presentation deserves serious study by all who are interested in the subject, and any who will give it such study will be surprised to find how completely the subject has been covered by Mr. Reed.

My discussion of Mr. Reed's paper will be confined to presentation of facts on the subject derived from studies of rural electrification in western New York, in New York State and in the Province of Ontario.

In New York State a study of farm lands has been made under state supervision for the purpose of classifying them in regard to their suitability for farms.

Practically all lands in the State have been classified into five groups. Classes I and II are rated as unsuitable for farm use and Classes III, IV and V are suitable for farm uses of one sort or another, Class V being the best sort.

In the territory of the Niagara Hudson System in Eastern New York there are 11,500 customers on rural lines. Of these 79 are in Class I areas, 378 in Class II areas and the balance, 11,043, in areas classified as III, IV or V.

On existing rural lines in the Eastern New York system there were on January 1, 1935, 4634 farms not served with electricity. These farms are unserved in spite of the fact that the power companies have exercised every possible effort to get them to take service. Their failure to take service is almost entirely due to the fact that they cannot afford to wire their houses and provide themselves with electric appliances even under very liberal credit terms offered.

A survey of farms not now on rural lines was made about five years ago in Eastern New York and rechecked in April, 1935. The results of this survey are as follows:

Class I areas	213 farms
Class II areas	1336 "
Classes III, IV and V	8300 "
Total	9849 "

Of these 9849 farms, 6600 are rated as possible prospects for electric service, the balance being unable to afford it.

On January 1, 1935, the Niagara-Hudson System in Eastern New York

had 3312 miles of rural lines, 48,530 rural customers and 11,500 farm customers.

The average cost of rural lines, including transformers, meters and services, in Western New York is $1,700 per mile. On the average there are 14.5 rural customers per mile and 3.5 farms per mile of rural line.

To serve all customers in areas III, IV and V in the Niagara-Hudson territory in Eastern New York would require 1980 additional miles of rural lines. The cost of these lines is estimated at $3,660,000. If all of the 6600 prospects took service, the average would be about 3.3 farms per mile.

The cost of providing wiring and appliances for these 6600 farms on the basis of the average rural customer who uses 840 kwhr per year is about $2,000,000, or about $300 per farm. To equip for sufficient consumption to make rural business profitable would cost about twice this amount.

For New York State as a whole there are 153,000 farms, of which 57,825 are now served by 21,730 miles of line. This means that at present 37.8 per cent of the farms in the state have electric service and there are on the average 2.6 farms per mile of rural line.

Preliminary figures from the state survey indicate that there are about 115,700 farms in areas classified as III, IV and V. This means that about half the practicable farms in the state are now served.

Probably not over 2/3 of these remaining farms could afford to wire and equip their farms and, as most of the non-farm rural customers are now served, the average will probably be 3 or less customers per mile of rural extension.

We have heard a great deal about the success of electric service in the Province of Ontario, where public ownership and operation of electric service prevails, so a few figures relating to rural electrification in the Province of Ontario may be of interest.

Rural electrification in Ontario is subsidized in 3 ways as follows:

1. The Province pays ½ the cost of rural lines out of taxes.
2. The Province finances the cost of wiring and appliances for farms on liberal terms.
3. The Province guarantees payment of the maximum service charge to farms.

Under these conditions it might be expected that rural electrification in Ontario would have progressed much further than in New York state under private operation without state subsidy. Such, however, is not the case. In Ontario there are about 193,000 farms, of which 28,000, or 14.6 per cent, are served. In Ontario there are 9175 miles of rural lines which cost $20,110,000, or about $2,190 per mile.

According to the 26th annual report of the Hydro Electric Power Commission, rural service in 1933 resulted in a net deficit of $108,589 in spite of all subsidies.

To conclude, the following facts may be emphasized:

1. Despite statements to the contrary, utilities in the United States have worked very hard to accomplish rural electrification for the past 12 to 15 years and the work done has been much more than any possible return would justify.
2. Farm service is now being given throughout the United States at considerably less than cost.
3. The degree to which utilities can afford to extend service to unserved farms is materially lessened by subsidies being offered municipal competitors by the government.

By P. H. Powers

Vice-President, The West Penn Power Company

ONE HUNDRED MILLION DOLLARS is to be spent for the extension of electric service into rural areas. The funds have been made available and the spending will start as rapidly as suitable plans are completed. Our responsibility is the development of a program which will promote the wise use of these funds. This is both an opportunity and a challenge.

The first step in a program of rapidly extending rural electrification with the aid and support of the Government is the establishment of a mutual understanding with the Government representatives. The next step is to state the problem clearly and to recognize frankly both its advantages and its limitations. The third step is the development of a program of procedure and the final step is to get busy and do the job.

A relatively few people in the industry are aware of the tremendous amount of ground work that Colonel Reed and his committee have accomplished in collecting factual information, convincing the Government representatives of the soundness of this data, and creating a working relationship with those in the Government agencies responsible for this program. The first step has, thanks largely to Colonel Reed, been ably accomplished.

His paper today is such a masterful and complete presentation of the various factors of the problem that it leaves little opportunity for discussion. Thus, the second step seems also to have been accomplished provided, of course, that our friends in Washington subscribe to the soundness of Colonel Reed's findings.

The Industry Committee is now in the process of producing a program for the sound and efficient employment of these funds. Thus some progress has already been achieved toward the accomplishment of the third step.

When it comes to the final step of doing the job, it will be well to remember that our success in this accomplishment will be measured, not entirely in terms of miles of line built or numbers of new customers connected. It will be judged in the long run by the thoroughness of the selling and educational job we do—the degree to which our new customers make full, satisfactory and understanding use of our service.

The objective of the Administration is to spend the 100 million dollar appropriation as rapidly as is consistent with efficiency, and in such maner as to connect the greatest number of customers and provide a maximum of new employment. It apparently has been recognized that this can best be accomplished by the utility companies, because in the publicity releases it has been intimated that 95 per cent of the money appropriated will be available for financing the privately owned companies. Should this procedure be followed, we will be expected to carry the ball. We must not fumble it. The remaining few minutes at my disposal will be employed in the consideration of some of the factors involved in developing a program.

The prospects to whom we must extend this new service are a part of an uninformed if not a highly misinformed public. They are particularly misinformed with regard to the possibilities of rural electrification. Although the R.E.A. has been conservative in its publicity, these prospects have been influ-

enced over a period of two years or more by inference, statement, and newspaper head lines to believe that some great and new bonanza awaits them. They have a perfect right to conclude, from what they have heard and read, that all electric rates are too high, that all appliances cost too much, and that they should expect to receive service as cheaply as their city friends who they think "get their electricity for $1.00 a month." They have been led to believe that the utilities are a grasping organization and that their chief interest during the past twenty years has been to avoid the extension of service into rural areas. They have not been told of the tremendous accomplishments already realized in rural electrification nor of the mounting economic difficulties as lines reach out into the more remote areas.

Therefore, our first selling job is the highly delicate duty of debunking our rural prospects of a lot of false notions, re-educating them in some of the simple economic facts, and informing them of the uses and advantages of a new tool. We must keep in mind the farmer's economic situation and approach the job with due regard for his viewpoint. It will be doing him no kindness to load him up with a debt if he cannot afford to pay for any electric service.

If those to whom Colonel Reed refers as "champions of the farmer" wish to be of maximum assistance to the farmer in securing electric service, they will need to cooperate actively with us in this debunking process. If the farmers continue to receive misinformation, the result will be but a hindrance to the program and make it that much more difficult of accomplishment. I am sure the R.E.A. recognizes this problem but there are many other agencies and social organizations who should also take this bit of advice to heart and receive it in the spirit in which it is offered.

These sincere but misinformed gentlemen must stop using false yardsticks of line cost. Many line cost figures have been quoted, in contemplation of inferior service, which we know from experience cannot possibly be realized even if the farmers should be contented with sub-standard service.

Nothing but disappointment is to be gained by continually referring to the T.V.A. rates as a yardstick for rural rates applicable to these new lines. While, in many areas, the rural rates have already been equalized with the urban rates, I am not convinced that in this program rates are of such importance as you might think nor that exceedingly low rates will be particularly helpful to the farmer. A certain amount of revenue will be required to justify the extensions. This revenue should not come from minimum charges alone but should come from the application of rate schedules to kwhr consumed.

When rates are very low, large kwhr consumption will be necessary and to make use of such amounts of current a considerable investment will be required in wiring, appliances, and apparatus. Many prospects will be unable to afford the payments and carrying charges on large purchases. The prospect who will pay an average of 8c. per kwhr and has small outlay for appliances may be about as well off at the initiation of this program as the prospect who will receive his service at an average of 4c. per kwhr and finds that he must make considerable investment in appliances. Of course, the ultimate objective is lower rates and as the rates are gradually reduced, the prospect will be able to finance additional appliances and thus enjoy greater service. It is my belief that many of the interested Government representatives realize that rates are not a controlling factor in the problem. An important part of our debunking procedure is to make this clear.

Just as soon as we have produced a satisfactory program, our greatest immediate need for its inauguration will be an authoritative statement from high sources, bringing the rural prospects heads down out of the clouds and placing their feet firmly on the ground. I hope a clear, frank, and informative statement of this character will be forthcoming and that it will set forth just what the prospective customers should and should not expect in their dealings with our industry.

Now, let's look at the rural prospect himself. How badly does he want service? We haven't done much to sell him on the advantages of electricity. For a number of years our primary effort has been the development of load among existing customers, not the attachment of new customers. Our promotional efforts have not reached beyond our existing lines. Sellers of other goods and commodities, competing for the consumer's dollar, have in the meantime been developing rural wants and demands along other lines among those we are about to approach.

In the early part of Colonel Reed's paper, he says "no widespread demand exists for rural service." Of course, Colonel Reed recognizes that a great *desire* exists for this service just as we all desire many things we do not have. That a greater demand does not exist, however, is due either to the lack of ability to acquire, or to a greater desire to acquire some other want, such as a radio or a Ford. This demand for rural electric service has yet to be created. Even where service is readily available in rural areas there is not yet a high saturation of users. In a recent Pennsylvania survey of 3,000 miles of rural line picked at random, it was found that 27.9 per cent of the premises along these lines were not taking service. I am informed that on a national basis rural customer saturation is but 75 per cent. Furthermore, those rural establishments in areas where lines have not been built, who really have wanted electricity, have been able to secure it through the use of home electric plants at a total outlay for plant, wiring and appliances which will not exceed that prospect's proportion of line cost wiring and appliances when supplied from our lines. It is true that we may now have a more attractive financing plan to offer—this may change things.

Therefore, I conclude that the job of spending a huge sum for rural electrification is primarily a selling job. Assuming we can reach agreement on construction costs, rates, guarantees, and a plan of financing the customer—each of which is a considerable undertaking in itself—then the biggest job of all is still left to be done. The customer must be persuaded that, on the basis of the satisfaction or profit he can get out of this service, it is in his interest to commit himself to a long period of payments for appliances, and to add to his operating expense for the payment of electric service.

Many of us have felt that the bottleneck in the development of rural electrification has been the customer's ability to finance his wiring and appliances. The most important new offer we now have to make the farmer is a better plan of financing his first cost. With the removal of this obstruction, we have a much better opportunity to progress.

Rural electrification, as envisioned both by the Administration and by the industry, is not accomplished when lines are built nor when homes are wired, nor can the use of electricity for the

simple purpose of lighting, pumping water and other essentials be termed rural electrification. Rural electrification means a complete use of service in accepted manners which will result in the production of more abundant living in rural areas.

The job of producing rural electrification in this sense is ours. We cannot do it alone, but the program must include a highly cooperative movement involving the Federal agencies, the manufacturers, the contractors, the dealers, the farmers and ourselves. We must and will all become—true Champions of the Farmer.

By E. C. Easter

Chief Agricultural Engineer, Alabama Power Company

MR. REED has presented to you a very interesting paper on the subject of Rural Electrification, and one that merits careful study by the electrical industry in its entirety and particularly the concluding paragraph.

The industry has made remarkable progress in the development, but has done a poor job of informing the general public of the progress made. More than four million rural homes of this country are enjoying the conveniences of 24-hour electric service at rates substantially lower than most city customers enjoyed only a few years ago. Yet the industry has generally referred to only the number of farms receiving electric service in the presentation of the accomplishment, and by the use of the figures as to the number of farms has inadequately presented the accomplishment even in farm electrification, in view of the fact that such figures do not include the great number of farmers who live in towns or hamlets for the conveniences and operate nearby farms.

The problems and purposes of serving a non-farm customer are no different from those of serving a farm customer, and the accomplishment in making electric service more generally available and useful to the public is, of course, inadequately expressed if we refer only to farms served. Therefore, I would like to suggest that this Institute and Industry give consideration to the preparation of statistical information with reference to Rural Electrification, in lieu of the farm statistics which, in my opinion, do an injustice to the industry by being interpreted as a measure of the accomplishment made in the expansion of electric service.

There have been, are, and probably will be, imaginary purposes of rural electrification, but the accomplishments made in the development have been in the pursuit of the constructive purposes: the effort to make the conveniences of electric service as generally available as economically possible, to assist in the development of the agricultural sections of the country, and to expand the market and usefulness of the electric utility service. The pursuit of the imaginary purposes has generally led to disappointment in the past and doubtless will in the future. The purchase and sale of electric service to the rural customer is a business transaction, and to be successful must be satisfactory to both parties.

The remarkable progress made in rural electrification has been the result of the vision, judgment and enterprising activity of the leaders of this industry and agriculture, and the progressive, sane attitude of the American farmer.

Some twelve years ago those leaders created a National Committee on the Relation of Electricity to Agriculture for the purpose of studying the problems and stimulating the development. The work of that Committee resulted in more complete and accurate information pertaining to the uses of electricity on the farm in less time and at less expense than probably any other development in the agricultural or electrical industry has required. Regardless of who is doing or will do rural electrification, the work of that Committee will serve as a contributing factor. There is, in my opinion, the possibility of much more constructive work to be done by that Committee that will further contribute to the progress of the development.

Twelve years ago the average rural customer used 300 kwhr per year and the service was of but little value to the customer and a loss to the utility. The uses and value of the service have constantly increased, and today normal average uses per rural customer are 1000 kwhr per year. The value of the service to the rural customers has increased even more than the proportional increase in the kilowatt-hours used and the value of the service to the utilities is naturally greater than would have been possible without the increased value to the customers.

Alabama ranks comparatively low, in fact fourth from the bottom of all the states, in average income per farm capita, yet the rural service of the Alabama Power Company suffered less losses in its rural business during the depression than any of the classes of service provided by it, and the rural business has shown the greatest pick-up of any class of service with the better conditions of the past months.

Rural electrification in April, 1935, as compared with April, 1934, showed the following increases:

	Per cent Increase	Per cent Decrease
Miles of Rural Lines	4.0%	
Number of Rural Customers	11.3	
Kilowatt-Hour Sales to Rural Customers	44.4	
Average Kilowatt-Hour Sales Per Rural Customer	27.6	
Revenue from Rural Customers	17.8	
Average Revenue per Kilowatt-Hour		18.4%

The average consumption per rural customer for 12 months ending April, 1935, was 1034 kwhr and approximately 30 per cent of the total kilowatt-hours used by rural customers was being used for commercial applications on the farms.

Electric service to the rural customers is generally very satisfactory and its value to them is observed by their neighbors and, therefore, there is a general desire for electric service by the rural citizens that has been created by the value of the service to the existing rural customers.

For the past 12 or 18 months there has been a great amount of news, surveys and speech-making pertaining to rural electrification, and this has resulted in developing a hope on the part of many rural people that they will get electric service without any effort or obligation on their part, but the desires for electric service have not yet developed into demands, and inasmuch as the preliminary discussions and presentations of the activity by many of the governmental agencies are much more attractive than the more definite plans, when formulated disappointment often results.

The introduction of Federal funds offers an opportunity and means of expanding rural lines much more rapidly

than could possibly be accomplished by the utilities with their own financial resources. The existing facilities and personnel of the utilities are in position to be of great value to the further expansion of rural service.

Rural electrification is not accomplished by just the extension of electric lines, and, further, the extension of electric lines without the necessary program to develop the values of the service to the customers and to the service agency is in the end detrimental to the rural electrification program. It, therefore, appears that if the building of lines is to be greatly accelerated, it is quite important that there should be a corresponding acceleration of assisting the rural customers in realizing the maximum possible value from the service as quickly as possible which, in my opinion, will require increased credit facilities to the existing and new customers with which they can purchase equipment with which to use the service, and an increased activity to familiarize the customers with the uses of the service.

Rural electrification as a whole is economically impossible. There are good rural lines existing and potential. There are many difficult problems, but with a continuation of the efforts of the industry it is entirely reasonable to know that the progress of the development will continue. The Federal funds and assistance in the development will prove a stimulus to the work of the present, and it is my sincere hope that a plan can be worked out to provide the maximum possible benefit from the immediate program without creating rural electrification plans that cannot be carried on after the immediate program is completed.

By Harvey C. Couch

President, Arkansas Power and Light Company

THIS is rather an unexpected opportunity, but I don't miss an opportunity to talk about rural electrification. I like that word "rural" rather than "farm" electrification.

Of course, I live out in an Arkansas farming country, and I listened with great interest to what these gentlemen had to say, because they have studied their subject very carefully and they have some very valuable information.

Our company started out building transmission lines several years ago, connecting rural towns, towns of 500 to 5000 population. We had hopes that some day we could reach out to the smaller areas. That was somewhat arrested, of course, by this depression which struck our part of the country just about the time it struck this, I imagine.

In my very few remarks, I hope to touch some of the fundamentals I believe the other gentlemen overlooked. When I left Washington in September there was a lot of talk about rural electrification, so when I returned home I thought it might be a good thing for us to make a very careful survey of our area. We surveyed this part of the 74 counties in the state of Arkansas. Some of the things we found rather interesting. We had felt the criticism, or inquiry, on the part of the rural people quite frequently, "Why is it your transmission lines cross our farms to nearby villages and we can't get power?"

On account of this growing field of misunderstanding and of talk about the power people and the power business, it seemed to me there was an opportunity for us to have our farmers understand our situation better if we would get out and study their situation with the hopes that we might be able to carry this service to them. Some of the things we found rather surprising in our territory. There are a great many rural extensions that can be made at a satisfactory profit almost under our nose, and somehow we have overlooked them. We also gave a lot of thought, not to a substandard line of construction, but we tried to develop a standard line of construction to meet the needs of these isolated areas, and we have been able to reduce the cost of those lines quite materially, and we believe we have just as rugged and permanent a line for carrying that size load as the other.

Another thing that we have done, and we found it very interesting, too, other than getting a little closer to our people, is that we have invited them to provide the right of way without charge to us, and as a result we have built several hundred miles of line and haven't paid one dollar for it.

We have a committee, and it is a sort of local board of directors. When it finds a farm that might be called indifferent toward our lines crossing the property, they visit the farmer, and so far they have converted them in every instance. We found it helps to build community spirit and a kindly feeling in a different way than we had expected.

For example, we have the oldest Baptist church in Arkansas. It is over a few miles from the substation, but there were enough farm homes in that area to justify a line down there. But the congregation said they were all poor folks and their income was low and they didn't know how they were going to wire the church and buy the fixtures. I said, "We will hire these folks. So Mr. Preacher, when you talk to your committee about it, why not ask them how many days' work they will give toward the wiring and so forth." And we did it, and every one of those ministers are for the power company now.

Now the question is, when are our farmers going to be able to pay the bills? Of course, lighting is first; water pumping is next. It is a rather substantial farm that can afford to pay you for a thousand kilowatt-hours a year. The great majority will be able to pay for only three or four or five hundred. But it is going to make that country a little better country, and it is going to make that farmer a little better citizen, and it is going to help keep his boys and girls whom he tries to send to college, satisfied with it.

I visited a young fellow in a college of about 1800 students, whose father lives in Arkansas. This boy was finishing, and I asked him this question. I said, "What real good are the agricultural sections going to get out of you boys and girls coming here to this school?"

"Well," he said, "Mr. Couch, I am sorry, I don't know, but I doubt if they are going to get much, because when you bring a boy or girl here and they have electric lights and running water for a period of four years they are not going to go back to these farm homes to live."

So I am just wondering if there is not social uplift there, or whatever you may call it. I am wondering if there is not an opportunity there that is well worthy of our consideration.

Now as to the matter of how these farmers are going to pay for it, their income is only four or five hundred dollars a year, and that is, of course, small, but they have to have a certain amount of lighting anyway. We have started

out on our program to assist them in producing something they are not now producing, or not now selling, to find this additional income. Then, too, we have talked to Mr. Rex Tugwell about the location of meat-curing plants in local communities, and things of that kind, so they can save some of their meat and be able to kill the hogs at the time when they are ready for slaughter, rather than have to feed them until cold weather. So, maybe we can assist them to save nearly enough to pay their bill. I don't know whether the way we are doing it is right or not, but we have started out to make a careful study of it, to see if we can't be of helpful, constructive assistance to these people.

I left Washington Saturday night to go back down there where we have our meeting at a little village nineteen miles from a railroad, and the people came in there on horseback and on foot and on muleback and in Fords, and so on, and I never saw such a wonderful collection of real country people, and I heard so many of them say, "This is the greatest day we have ever had in this community, and we are for it." I remember one of the fellows who sat up on the stage with me. He was a state senator and he wasn't a friend heretofore, but he certainly spoke very kindly and was very much interested in what we are doing. So I felt that a day like that was good for all corporate interests in our business, and I told Mr. Gerard Swope that I wish he could have been there.

We kind of work some of these supply companies for premiums, you know, and prizes for these folks. We had a nice electrical refrigerator there. We said, "We are going to give this refrigerator to the largest family," and do you know, the lady who came to get that refrigerator had eleven children.

And we had a washing machine there that we gave away to the man who had the largest number of children under ten years of age. A fellow and his wife walked up with six.

Well, now, you know, a lady that has eleven children with a refrigerator out on her farm—it is going to be a great thing for her and is going to save a lot of money.

I don't want to take your time and I know it is late, but I tell you, let us not pass this opportunity up, because these farmers want a place for their children to come back to live, and the trend must be back from the city to the farms, because we are getting too many in town, and I believe we have got to get them back out there in the country.

Winners of 1935 Prize Awards

THE winners of the several prize awards sponsored each year by the Edison Electric Institute were announced and presented Wednesday morning, June 5, at the Fourth General Session of the Convention by Mr. Frank W. Smith, President of the New York Edison Company and Chairman of the Prize Awards Committee of the Edison Electric Institute.

The awards comprise, first, the Charles A. Coffin Medal awarded in recognition of a distinguished contribution of a public utility operating company, the accomplishments so recognized being all embracive of the company's activities. The second group includes those in recognition of outstanding accomplishments by companies in specified activities. They are the George A. Hughes Award for the greatest contribution to the development of the domestic electric cookery load, and the Thomas W. Martin Award for accomplishments in rural electrification. The third group includes prizes to individuals for essays on subjects relating to the electric light and power industry, embracing the H. M. Byllesby Prizes, B. C. Forbes Prize, A. L. Lindemann Prizes and the James H. McGraw Prizes.

A report of the Prize Awards Committee in which the value of the competitions to the industry was stressed and acknowledgments were made to the donors of the prizes, was made at the session. This report will be published in the next issue. In many cases the prize winners were present to receive the awards from the donors or their representatives. The awards and their winners were:

The Charles A. Coffin Award

To the public utility operating company which has made a distinguished contribution to the development of electric light and power for the convenience of the public and the benefit of the industry.

Gold Medal awarded to The Tennessee Electric Power Company, Chattanooga, Tenn., Jo C. Guild, president.

George A. Hughes Award

To the company showing the greatest contribution to the development of domestic electric cookery load.

Cup awarded to Florida Power and Light Company, Miami, Fla.

Cash Prize of $1,000 to Mr. R. H. Fite, Jr.

Thomas W. Martin Rural Electrification Award

To the company showing the greatest contribution to the advancement of rural electrification during 1934.

Bronze plaque awarded to Puget Sound Power and Light Company, Seattle, Wash., Frank W. McLaughlin, president.

H. M. Byllesby Award
(Subject—Accounting)

First Prize, $100—Mr. R. E. Kerns, Oklahoma Gas and Electric Company, Oklahoma City, Okla.

Second Prize, $50—Mr. John H. O'Grady, Chicago District Electric Generating Corporation, Chicago, Ill.

Third Prize, $25—Mr. Samuel J. Helfman, Philadelphia Company, Pittsburgh, Pa.

B. C. Forbes Award
(Subject—Public Relations)

Cash Prize, $250—Mr. Robert C. Cleminson, Nebraska Power Company, Omaha, Neb.

Honorable Mention—Mr. Eugene R. Schief, Brooklyn Edison Company, Brooklyn, N. Y.; Mr. Daniel Ravenel, Jr., South Carolina Power Company, Charleston, S. C.; Mr. William E. Frazer, San Diego Consolidated Gas and Electric Company, San Diego, Calif.

A. L. Lindemann Award
(Subject—Electric Cookery)

First Prize, $150—Mrs. Dera Arrington, Oklahoma Gas and Electric Company, Oklahoma City, Okla.

Second Prize, $100—Miss E. Mae Jones, Virginia Electric and Power Company, Richmond, Va.

Third Prize, $50—Miss Anne L. Robertson, Virginia Electric and Power Company, Richmond, Va.

James H. McGraw Award
(Subject—Engineering)

First Prize, $250—Mr. J. E. Allen and G. J. Gross, Pennsylvania Water and Power Company, Baltimore, Md.

Second Prize, $150—Mr. George G. Guthrie, Detroit Edison Company, Detroit, Mich.

Third Prize, $100—Mr. M. L. Waring, New York Edison Company, New York, N. Y.

Some Washington Observations

By Merle Thorpe
Editor, Nation's Business

An address before the Third Annual Convention of the Edison Electric Institute, Atlantic City, N. J., Tuesday morning, June 4, 1935

MY observation is that the troubles of the power and light industry are only a part of the general campaign for larger political power and control over business enterprises. It is world-wide. Its expression in Europe is found in Hitlerism, Communism, Fascism—and I hope a little bit later to make a comparison of these "isms" with our own national program, and I think you will see a remarkable similarity. It is an age-old struggle, nothing new about it. Politicians want more power. The bewilderment and confusion over the contradictory measures put forth almost daily could easily be cleared up if this objective were kept in mind: Who is to control, the individual citizen or the politician?

The drive for Government ownership and operation amounts in its simple essence as to how management shall be chosen. The only difference in the operation, for example, of the light and power industry by politicians or private individuals lies in this: Shall the managers be chosen by personal competition from the ground up as in the past, or appointed by a postmaster general on a patronage basis? The money in either case comes from the thrifty citizens, in one by voluntary investment, in the other by compulsion through taxation.

The danger to our national progress is that politcial management has yet to prove itself. Politics, since the world began, has never created a wealth producing enterprise in the sense that it provides in itself for the continuous employment of men. Walk down the street with me. Those telegraph and telephone poles, those rails, department stores, power plants, buildings, that airplane overhead, the motion picture house, the radio aerial, ships, the truck delivering coal, the oil derrick, the automobile—none was created by a political organization, each was brought forth by the voluntary cooperation of individuals.

The bank is a development of the jeweler who safeguarded his customer's cash; the insurance company began as a pooling of risks by traders.

MR. THORPE

You may still be skeptical. You may call attention to the city water works and to the post office. But, as Herbert Spencer points out, it took 50 years of development by individuals to promote the idea of city water works before political bodies adopted them. Even the post office in Great Britain and the United States grew from the private collection and distribution of mail. No, political capitalism engages in nothing new. It simply takes over what has already been pioneered by individual citizens. That is the record, and I turn to it with no thought to disparage the character of the men and women in public service. The limitations of political government are inherent and quite apart from the quality of its personnel.

Observation No. 2: Politics is inept when it leaves its proper field. We started out, as you remember, two years ago to make war against this depression. See how we have accomplished that strategy. When we declare war against another nation we set up a propaganda bureau. That is the first thing and a necessary thing in order to keep up the morale of the fighting forces abroad and of the civilian forces at home.

Well, in this war against the depression we set up a propaganda bureau, the greatest the world has ever seen. Did we go about it in the way that would be designed to win the war? Did we say, "Look at those regiments, those industrial regiments, marching to battle, over there that brigade of bankers; you can depend upon those bankers, they are your friends, they have shown great cooperative spirit in building up American enterprise. If you doubt that go to the reports of the Canadian Commission and the British Commission sent here to study our banking system, and in both cases they held up our banking system in comparison to their own systems as cooperative, one reason that the United States had gone ahead and had shown industrial tail lights to the other nations of the world."

But did we do that? No. We said, "That brigade, you can't have much confidence in them. They are money changers. They will steal a widow's mite to buy a Peruvian bond. You can't trust them."

And the next brigade, the manufacturers—did we say to the people of the country: "That brigade you can depend upon. They have taken natural resources and put more value into their finished products than any other nation on the face of the earth. They pay the highest wages of any other nation. They have the best sanitary arrangements. They have taken more care of pension plans than anywhere else. You can depend upon them"?

No. We said, "Those manufacturers, it is too bad, but we can't depend upon them. They are chiselers, rebaters. They exploit child labor. They operate sweat shop systems. They can't handle their own labor problems. There is an eternal conflict between the employer and the employee and until we can settle all of those things we can't hope for much success in this battle from that brigade."

And the third division, the power and light industry—did we as a propaganda

bureau, in order to keep up the morale of the fighting forces and the civilians back home, tell what had been accomplished and could be accomplished by that industry? Did we say, "In 50 years, without government subsidy, through the confidence in their work, they have collected from the people voluntarily twelve to fourteen billions of dollars, and they have put electric light in 20 million homes in this country, and at a cost less than the price the men pay for cigarettes and the women pay for cosmetics." Did they say that it was made available for rich and poor alike, that it was a dependable service operating 24 hours of the day? Did they say that? No. They said, "The power and light industry must be reformed first before we can hope for any help from them in this battle against depression. They are bleeding the people white; they are holding companies; they are iniquitous, and we must reform that brigade."

And so on, through the whole list of the battalions of American industry. Commercial aviation was without morals or conscience. The lumber, oil and coal men were called barons. Exchanges were gambling houses. Retailers were gougers and oppressors of the consumer. Mail order houses and chain stores were worse. Advertising and selling were waste and direct charges upon consumption. Steel and chemical companies making munitions were the last completing the cycle.

This amounts to the indictment of a whole people charging them with immorality, bad ethics, non-social instincts, common dishonesty. It likewise indicts the life-long work of our churches and schools, institutions where unbounded energy and self-sacrifice and money had been devoted to character building.

Is it any wonder, then, that commercial industry so misrepresented, blamed for every shortcoming of human nature, has failed to respond when the principal factor in such response lies in the faith and confidence of the people themselves in the very institutions and processes to which they look for business recovery.

Observation No. 3: We, the people, for the moment, by Supreme Court decision, have narrowly escaped a new despotism more repellent than the autocratic rule we threw off in 1776. We were beginning to learn that Federal bureaucrats can be as arrogant and despotic as any divinely appointed ruler. We saw bureaucracy in recent months add hundreds of thousands to its ranks, a 35,000 increase in Washington alone, and new Federal agencies set up in every hamlet. We saw one of the 50 new ruling powers, the NRA, pass 5000 laws with criminal penalties, and 17,000 regulations providing fines and boycotts. We noted with concern the thousands added to the Federal police service.

The turning back to Constitutional principles is heartening to thoughtful Americans. The Constitution expresses the changed relationship brought about 150 years ago of the individual to his government. Up to that time a central political authority, usually a king with an alleged divine right, had directed and controlled the activities of the individual, who could be called out for war and who could not ask the reason why, nor where, nor against whom. The individual could not leave his caste in society and it was well nigh impossible for him to leave the work and calling of his fathers. But the founders of our economic and social system demanded that the order be changed; that, instead of the state directing the individual, the central government should be the servant, not the master.

I suggest a re-reading of the early history of these United States. As I reread the debates which led up to the formation of the Union, I find that I was not taught the whole story of the Constitution. I was taught that it was a mechanism designed to protect the political liberty of the individual. That is true, but there is something more. If we look deeper, we see that back of political liberty was the safeguarding of economic liberty, the economic freedom of the individual, giving him the right to choose his work, the right to manage an enterprise in his own way, and the right to gain and hold the reward, if any, for the successful conduct of that enterprise. Political freedom was necessary to protect this economic freedom. President Coolidge expressed the corollary of this "self-evident truth" when he said, "The loss of economic freedom will carry with it the loss of political freedom."

So, I have learned in a recent review of those early days that the fear was not that a strong centralized government could not be set up, rather the fear was that the pioneers of this new political field would be unable to set up any government that was not too strong and that would not ultimately deprive the individual of his economic rights. The men of that time knew by bitter experience what rights meant, and they knew what they were striving to accomplish. In every possible way they limited the central authority. It is a fact, little known, that the state militias were organized as a defense against the arrogance or tyranny or caprice of a central government. You may be privileged to recall that when a resolution was introduced in Congress in 1813 during our war with England, calling for a mobilization of the State Militias to invade Canada, the Senator from Massachusetts, Cyrus Mason, arose from his seat and said: "You will take the militia of Massachusetts only at the point of the bayonet."

It is gratifying, therefore, to realize that a halt has been called to the marked tendencies today which would invest political Washington with more and more authority and supervision over our local affairs, and, indeed, over the affairs of the individual himself.

Our industries have grown. Our standards of living have arisen to undreamed heights. Our average man is way above the average. Consider the immigration laws that we have had to raise higher and higher to keep the nationalities of 60 other countries from flooding us. All this has been brought about because of the operation of this truly American system.

Observation No. 4. We are a perverse people. Our memories are short. Just now, because of a few years of hard times, having grown soft and spoiled, we are clamoring for the very sort of regimentation and political control we once abhorred and spent blood to destroy. While we would spring to arms at the invasion of old world armies, we receive enthusiastically an invasion of old world ideas. Yet these subversive doctrines are more to be feared than armed forces and battleships.

We profess to have little time for European "isms." Patriotic labor, business and women's organizations are now arming themselves to combat subversive activities which would replace the label of Republican or Democratic government with that of Communism, Nazism or Fascism. The reasons for that antipathy are fairly obvious. Foreign "isms" are too much like the old-fashioned patent medicine which professed to cure everything from ringworm to lung trouble. Democracy, as every politician will tell you, likes to deal with ailments as they arise instead of resorting to a cure-all in the form of a dogmatic creed. It will not allow itself to

be classed in the mold of any kind of doctinarianism or subscribe to any preconceived way of doing things.

Take Communism for example. It is particularly anathema. The most extreme of American-bred radicals denounce it. Patriotic organizations like the American Legion, the Chamber of Commerce of the United States, the American Federation of Labor, the Daughters of the American Revolution, are actively campaigning against Communism. Even Father Coughlin and Senator Huey Long repudiate it. Congressional committees are formally investigating its ramifications, and both Republicans and Democrats give us the assurance that we shall not find ourselves, after the depression is over, in the arms of any European political "ism."

Is all this alarm raised over a label or the contents of the bottle? Is Communism identified by a bewhiskered and disheveled alien who carries a torch in one hand and a bomb in the other, or by the tenets of the faith preached in its name? Is Congress gagging at a name and blissfully swallowing poison like the teetotaling farmer who abjured alcohol and discovered that he had been drinking it under the guise of a household tonic? Has it been barring the back door against the threat of destruction by force and violence and at the same time inviting it in at the front door dressed up in frock coat and top hat? Are we physical cowards trembling at the thought of death and pillage popularly associated with Communism while at the same time we are indifferent, if not sympathetic, to a communistic control of our individual affairs? This is not an academic question. It involves the ordering of our daily lives by an arbitrary, even despotic, power.

Therefore, it would seem wise to take a look at Communism shorn of its whiskers and its bombs. How would it affect you and me if Communism were in control, absolute and complete, of the United States today? Communism, like everything else, is as Communism does. If Karl Marx, the father and guiding spirit of this forbidding cult, were living in the United States today, how would he go about trying to convert us to his beliefs and induce us to put into practice the gospel he preached? It happens in his own time that he did just this, and fortunately for our purpose this morning, he set forth in black on white his program of Communism leading to a world revolution. Nearly a hundred years ago he drafted a ten-point program of just what he would do. Ten points, incidentally, setting a precedent for our modern crusaders, because they always have a point by point program. This was the Communist manifesto of 1848. Here, then, is our answer. From it we can furnish our Chamber of Commerce and the A. F. of L. and the D. A. R. and the vigilantes who are out in their back yards with their rifles looking for these foreign-accented aliens skipping from tree to tree trying to get in the back door—we can furnish them with an old-fashioned police bill that I used to see out in the Western country years ago. You know how it read, "Man wanted," and a description of the man. And we can give a full detailed description of the Communist and perhaps take some of your vigilantes from the back yard and bring them around to the front yard, where the doors of the house are wide open.

The first point, and the most important of all, it appears, in Karl Marx's plan for Communism was this: Centralization of credit in the hands of the state by means of a national bank with state capital and an exclusive monopoly. This was the axle of the communistic wheel and the same idea is echoed today by Marxians all over the world. Lenin, avowed disciple of Marx, who has been deified as the father of Russian Communism, observed, "Through the nationalization of banks, they (the small businesses) may be tied hand and foot," and elsewhere he said one state bank was nine-tenths of the socialistic apparatus; and even more recently the leader of the British Socialists, G. H. D. Coles, said, "Before we nationalize any industry we should nationalize the banks. With the banks in our hands we can take over other industries at leisure."

The importance of controlling banking resources thus emphasized is not appreciated solely by those in the back yard guarding the big house against an invasion of communists.

Not long ago a witness appeared before the Banking and Currency Committee of the House of Representatives and said that to achieve certain objectives it is necessary to concentrate the authority and responsibility for the formulation of national monetary policies in a body representing the nation. It is necessary, he added, to improve our machinery of monetary control. The witness in this instance was not a communist identifiable by his whiskers and a bomb and breathing imprecations against the capitalistic system. He was speaking of Title II of the banking act which would make possible the establishment of political control over the operations of the Federal Reserve System, and he was the Governor of the Federal Reserve Board.

Much water has gone under the bridge since Karl Marx laid what he conceived to be the communistic cornerstone—the control of the monetary system—but it still seems to serve for any system of political management contemplating political control of credit and capital, regarded as so essential to a communistic program. The United States Chamber of Commerce in a formal declaration described the operations of this Bill as follows: "The real needs of commerce and agriculture and industry could be subordinated to the spending plans of the Government, and to its dictation concerning the volume and kind of credit to be made available from time to time. Efforts could be made to control the level of production, prices and employment through adjustments of the mere volume of money and credit by a Washington bureau which thus would be permitted to experiment with a most dangerous form of so-called central planning."

What does this mean to you and me and to the man in the street? What does the dictation of volume and the kind of credit mean to us? It means that an individual in Washington would have the power to decide for him if he might buy an automobile on the installment plan, or indeed, buy one at all. It means that his deposits in the banks are no longer under his control through his banker, but may be allocated for some social purpose in another section of the country, or, indeed, in a foreign land. It is all a part of a larger policy which Professor Tugwell describes as follows: "Capital allocation would depend on knowledge from some planning agency of how much for a measured future period ought to be put to one use rather than to another."

Given this information, the first step in control would be to limit self-allocation. This is the first great problem in this field. Industries, because of their past and present, regardless of temporary luck, grow overconfident of the future and expand their own activities beyond all reason. Therefore, a federal bureau could tell the people of the United States how and when they should

expand their business activities, and I wonder if we had had such a bureau fifty years ago when the incandescent bulb was discovered, if such a bureau could have planned for this industry what has been brought about by these individuals who need, according to our present-day philosophers, some central planning from a political source.

And another of the ten points of the Communist manifesto was this: Centralization of the means of communication and transportation in the hands of the state. Now this doesn't smack of force and violence and sudden death. Neither does it indicate malevolent hostility to the capitalistic system. The same sentiment, as a matter of fact, is echoed by the Federal Coordinator of Transportation as late as the year 1935. He said, speaking of the railroads: "Theoretically and logically public ownership and operation meets the known ills of the present situation better than any other remedy. When an industry becomes so public in character"—and that has point for the Power and Light Industry—"becomes so public in character that such intimate regulation of its affairs becomes necessary, in strict logic it would seem that it should cease to masquerade as a private industry and the Government should assume complete responsibility, financial and otherwise."

One might, quite consistently, be tempted to ask whether the time has not come when government should cease masquerading as government and openly assume the role of owner, operator and manager of not only railroads, but banks, power plants and other business institutions by which American citizens earn their livelihood.

There is at this moment a bill before Congress, introduced by Senator Wheeler, providing for government ownership of railroads. Furthermore, as to communications, the other point in the Marx program, Congress has begun a $750,000 investigation of the communication companies, a step which to this audience should be strangely reminiscent of the early investigations of the power and light industry which have lulled the public into approval of confiscation and competition by political forces.

A third point in the Marxian program sounds a strikingly modernistic note, as if it had been evolved by a latter-day communist belonging to that school which holds that American economic policy has become out of date. It reads, "Combination of agriculture with manufacturing industries; gradual abolition of the distinction between town and country by the more equable distribution of population over the country."

From this it would appear that the germ of the idea which is now blossoming into subsistence homesteads, into the government-fostered industries in the Tennesseee Valley, and into the expenditure of government funds for the redistribution of so-called stranded populations, did not originate with latter day professors who have discovered that our modern economic system needs a complete change. On the contrary, that seed was planted in 1838, long before these social diagnosticians were born, and planted in communistic soil.

Two other related points of the Communist Manifesto are: Extension of factories and instruments of production owned by the state, and equal liability of all to labor. Here are echoed the twin ideas around which controversy now ranges, planning and regimentation. The first point, state ownership of factories and instruments of production, smacks too much of socialism to be accepted willingly by Congress, so the bill has to be coated and administered under another label. The official Government Manual states as one of the purposes of the Tennessee Valley Authority, "The promotion and coordination of industry and agriculture," almost word for word the communistic manifesto of 1848. It is also "Planning for the complete Tennessee River watershed, including erosion control, forestation, and further use of mineral resources."

It is producing and selling power. It has incorporated the Electric Home and Farm Authority, a mortgage company to finance the sale of electric appliances, and the Tennessee Valley Associate Cooperatives to organize, establish, manage and finance cooperative industrial enterprises. The effort to preserve the distinction between owning and operating in Marxian language and promoting and encouraging is rather conspicuous, but at times, to the lay mind, we find it difficult to grasp this distinction.

Congress has swallowed complacently enough the planning bill compounded after the communistic formula, although it balks at the stronger dose, regimentation. It has just appropriated 250 millions for rural rehabilitation. It has delegated the authority by which the development of agriculture can exercise a certain measure of control over the planting of crops. It has approved the idea of establishing an arbitrary balance between industry and agriculture. But it still makes a wry face at regimentation, preferring the milder term, cooperation. Instead of compelling the farmers to plant crops in accordance with a federal plan, it arrives at the same end by paying bonuses or crop benefits or by outright purchase.

But the gap between cooperation and compulsion is gradually narrowing. As I speak, there is pending before Congress a proposal to regiment the processing and distribution of food products by means of a licensing system under political control. By licensing is meant that no person or corporation handling, processing, buying or selling products of the soil could do business without the permission of a bureau in Washington. In its original form this bill would have empowered the Administration to control 1,100,000 businesses in the United States.

On the other Marxian point the Wagner Labor Disputes Bill is, at least, a first step toward the regimentation of labor. It lays down conditions under which labor is to be employed and curtails the right of minorities to bargain for themselves; not to say the right of the individual to work as he chooses. It is even more drastic than 7a of the NRA which moved haltingly in the same direction.

Two other points of the Marxian program called for a heavy progressive or graduated income tax to abolish the profit incentive, and second, the abolition of the right of inheritance, to transfer that loyalty of family to a loyalty for the proletarian state; and both of these are well toward accomplishment in democratic America. Income taxes now range as high at 63 per cent and inheritance taxation, federal and state, is approaching the point of confiscation. The proposal of Secretary Morgenthau for an inheritance tax last month to meet the bonus payment is in point. As an example, $100,000 left to a widow and children would pay $36,000 additional federal inheritance tax.

But the head and front of the communistic program is this: Abolition of property and land and application of all rents to public purposes. By land is here meant, of course, natural facilities or primary sources of production. This also smacks too much of heavy-handed socialism to be easily reconciled with our democratic ideals, but it is possible that democracy is heading down the same road; although it might not be deliber-

ately setting forth, it is the same destination.

Uncle Sam is fast becoming the creditor of millions of his citizens. He is already prospective owner of a substantial proportion of electric power plants. He holds mortgages on 855,000 homes. Through the Farm Credit Administration he has made 2,300,000 loans to farmers. He had outstanding at the turn of the year $837,000,000 in loans to banks, building and loan associations, insurance companies and mortgage loan companies. He had liens aggregating $376,000,000 on railroads. Under emergency appropriations, the government had acquired through seven federal agencies, up to January 31, 1935, during the past year and half, 23,406,029 acres of land.

Political government, in short, has a substantial mortgage on America. From this it is a short step to ownership and the communistic aim, equal liability of all to labor, and it is brought perceptibly nearer achievement, because if the worst comes all citizens will be obliged to take whatever job the government might hold out to them.

Now from this rapid survey it is apparent that we, so concerned about subversive activities of the foreign communists, shying at the communistic label, are in reality swallowing the same dose under the brand of a new order guaranteed on the label to save democracy.

Congress is quite as skeptical of the curative powers of Fascism as of Communism. It will denounce out of hand any nostrum labeled with the stern visage of Il Duce, not so vociferously as that, perhaps, of the Georgian countenance of Stalin or Lenin, but nonetheless firmly. The idea of a corporate state accords no more with American democracy than the idea of communistic dictatorship. Nevertheless, Congress has incorporated more than fifty government corporations equipped to do anything that is done by private corporations, to carry on any kind of business, manufacture, buy and sell goods and commodities of any description.

In this machinery set up as an adjunct of political administration may be found, Mr. President, such time-worn devices as the inter-locking directorate and the holding company. Some of these corporations, such as the RFC and the numerous banks established to allocate capital to the farmer, were chartered by Congressional statute. Others have been chartered by executive direction under a blanket grant of Congressional authority. Still others have been chartered by administrative officials under authority delegated by the President, to whom it was delegated by Congress. The TVA, for example, was created by executive order, not by Congress. The directors of the TVA then chartered the Tennessee Valley Associate Cooperatives under the laws of Tennessee. The same course was followed in creating the Federal Subsistence Homesteads Corporation. The original course of authority was that granted by Congress and the NRA. This was delegated by the President and by him delegated to the Secretary of the Interior, who ordered the creation of the corporation.

By this round-about, if not devious, course, the Federal Government has secured from the states permission to carry on as a corporation almost any kind of business it may choose to take up.

As much, therefore, as Congress might abominate Fascism and its twin brother, Nazism, it appears to have reconciled itself without much protest from us to the duplication of the Fascist practice, just as it has taken many leaves out of the Communistic book.

So, the question I raised at the beginning of this rather long observation still stands. Do we as Americans abhor Communism only because we are afraid of the physical violence popularly associated with Communism, and are we really at heart sympathetic, or at least indifferent, to Communistic principles when they are applied peacefully and narcotically? Does the new shiny label on the old bottle make the potion appetizing and desirable?

My observation No. 5, and in conclusion, is the whole welter of measures which are now being introduced and implanted into American life brings us to a choice, not that of following the philosophy of Adam Smith in economics or of Jefferson in political theory, but this, rather. We must decide whether we shall set up arbitrarily to create a social order and then mold the individuals by force into subordination to it, or whether we shall proceed as in the past to center our efforts on the making of men and women who are themselves competent and are disposed to do what should be done.

We hear a great deal today of quotations from the Scriptures. Senator Long the other night, by actual count, quoted from the Bible twenty-two different times. Well, I am not a religious man, but I seem to remember that when Jesus Christ came to this earth and laid down rules of life for the people, that the Apostles came to him and said, "Oh, Master, why don't you make them? Why don't you force them to live this way? You have the power; you are an all-seeing judge; you can mete out punishment."

The Master said, "Oh, no, that is not the way. There would be no satisfaction in that. No, you must go out to the individual and see that he is reborn again, and from that we will evolve a better and better civilization and a better society."

And I repeat that the choice we must make is whether we shall set out arbitrarily to set up a rule of life in economics and in our social activities and then force the individuals to live in conformity with that rule, or whether we shall proceed as in the past in our efforts to make men and women who of themselves will be competent and disposed to do the right thing.

I read in the morning paper a statement by Senator Byrnes to the effect that we must never go back to the old order, and it seems that we have all fallen under that spell, that there is none so poor to do reverence to the old order. And yet it was only five years ago by the calendar that foreign countries were sending their commissions, private and official, to this country to study us and our methods and to learn the story, if possible, of our great success and prosperity; and it might be well to recount what they found. They found in this country only 6 per cent of the world's population, that that little 6 per cent had amassed more than half the world's wealth and had distributed that wealth so widely that the condition of the average man here was a magnet to draw the men from sixty other nations to these shores.

They found also that with 7 per cent of the world's acreage this 6 per cent harvested more than half of the world's foodstuffs, that 60 per cent of the minerals were extracted in America, that half of the communication facilities, nearly half of the railways and electrical energy have been developed and are in use here, that individual transportation—automobiles, we produced 92 per cent of them and kept 90 per cent at home to travel over 600,000 miles of hard surfaced highways. This 6 per cent, they found, maintains a standard

of living which consumes half of the world's coffee, half of its tin, half of its rubber, one-fourth of its sugar, three-fourths of its silk, one-third of its coal, and two-thirds of its crude petroleum; and that in 1933, to bring the figures down to date, more than three billions of dollars were spent on education, an amount that topped the total spent by all other countries. Nowhere are there such luxurious school buildings, such a wealth of educational facilities. European schools enroll only a small percentage of the children of school age compared with America.

And real and practical independence for women; while other nations have talked about it, the old order provided gainful occupations for eleven million women, adding seven million to the pay roll between 1900 and 1930.

The American plan produced three times as much wealth in its short life as the whole world has been able to produce up to 1776, and what the common man was able to do for himself in this land of opportunity is eloquently suggested by these four facts: 20 millions owning stocks and bonds and other intangibles, 62 per cent of the farms of this country unincumbered, according to the Department of Agriculture, despite all the talk about the mortgaged farmer, and 55 per cent of the homes likewise unincumbered, and for a social security program, witness 65 million Americans as individuals who have taken out life insurance policies representing a total cash value of over thirty billions of dollars, and representing a hundred billion dollars of insurance later on.

It seems that we are assuming a defeatist attitude. We are all ready to believe that we have been a tremendous failure as a nation. We are like the old New England lady, you know, that always enjoyed bad health. We set out to make this depression the biggest and grandest depression the world has ever seen in true American style, and we have just about done it.

We listen at the radio to the Senator from Louisiana and the good father from Detroit tell us that 2 per cent own 90 per cent of the wealth, and there must be a redistribution not only of wealth, but of income, and we believe it. And yet, I asked the president of a great automobile concern the other day to add up all that he had paid in twenty years in salaries, bonds, interest, rentals, and then add up all that had gone to labor, skilled and unskilled, and to give all those salaries and interest and dividends to labor, and he figured and figured, and said, "That can't be right." Then he figured further and said, "Yes, I guess that is right." How much would labor have received if all these things had been contributed gratis, free, for nothing? It came to three-quarters of a cent an hour more, and Colonel Leonard Ayres has pointed out that in 1928, a good year, and in 1932, a bad year, that if all salaries and bond interest, dividends, had been distributed among labor, the laboring man would have received $9 a month more than he did receive in either of those two years.

I am only a reporter. When they say that the wealth of the country is monopolized by 2 per cent and that 2 per cent in Wall Street, I use my eyes, and what I see is more convincing than statistics for the reports of national economic planning committees.

Last summer I went back to the little town in the Middle West where I was brought up, just a little town, 500 population then, 500 population today—the Chamber of Commerce only claims 1000. I was glad I went, because I remembered when I was there thirty-five years ago that my mother used to send me down to the grocery store with a coal oil can to get some kerosene and the grocer put a potato in the spout. I got back home and my mother was cleaning lamps (and how she hated it), polishing the chimneys with newspaper.

I went back to that old home last summer and found electric lights, and pushed a button and I said, "What luxury."

"Oh, it only costs $1.60 a month."

And I thought of the 22 million homes thus equipped, and I said, "There is some wealth that is not monopolized by any 2 per cent of the people, nor by Wall Street."

I remembered the school to which I trudged with a lunch pail and five books, and I went back to look at that school today, and oh, you ought to see it. Gymnasium, free bus, free lunches if you will sign a slip that you can't afford to bring your own lunch—the only thing lacking was a swimming pool, and I asked them about that and they said, "Well, the plans were drawn before anyone told us about having a swimming pool."

In that old school house, with a big round stove in the middle, you were too hot if you were close and too cold if you were far away, and now there is steam vapor heat. I said, "There is some wealth that isn't monopolized by any 2 per cent of the people."

I remember that when anyone made a trip to a town ten miles away in a buckboard, when he returned folks gathered around and said, "What did you see on your trip?" Now those citizens get in their cars and go to Kansas City eighty-one miles away and are back in the afternoon.

For entertainment, I remember in the old days we had an opera house. We had Ten Nights in a Barroom; we had Uncle Tom's Cabin with real bloodhounds occasionally, and a magic lantern show. I remember to this day that Sunday night that the banker invited some of us boys over to his home and we had a most exciting time. He let us look through his kaleidoscope. There today, it seemed, are radios in every home, talking pictures from nine o'clock in the morning until God knows how late at night—wealth, of a kind, not monopolized by Wall Street or owned exclusively by 2 per cent of the people.

My father broke his ankle and he had the best medical attention he could get, but he suffered for fifteen months; now a colored cook today gets better medical attention than Grover Cleveland had. And that is wealth that is not monopolized by any small section of the population or any section of the United States.

I delivered milk in a bucket, with a strainer on the bucket and a dipper, and I received 5 cents a week for that service. Try to get one of those boys back there now to work an hour for 5 cents. I took that 5 cents and broke it up in pieces and I made them last through the seven days, and I bought an all-day sucker, a piece of bologna, a sweet soda cracker. Those were the luxuries.

Today milk is delivered in the early morning, certified milk, pasteurized milk, left on the doorstep. Soon they will have a plan by which the housewife will not have to open the door and drag it in; it will be put on the kitchen table for her.

I am wondering if in our readiness to accept these panaceas, mostly brought in from the old countries, if we are not forgetting what has been accomplished and if we shouldn't set our minds and our hearts to seeing to it that that spirit of enterprise in the individual which has brought all this about, untrammeled, unrestricted, should remain as the great heritage of the American people.

Building Good Will

By Frank McLaughlin

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An address before the Second General Session of the Third Annual Convention of the Edison Electric Institute, Atlantic City, N. J., June 3, 1935

BUILDING good will and preserving our business are one and the same. We are assured of a place in the sun only on the basis of the merits of our performance in discharging to the satisfaction of all concerned the obligations of a public trust. If we fail in this, it is inevitable that somebody else will take our place. We don't rule by divine right; we exist because the people will it. Autocrats breed bureaucrats. No business can survive where customers patronize it only because they have to and are not satisfied to do so. The fact that people want to trade with an enterprise gives it good will. The success or failure of a business depends upon good will. Therefore, good will, which is just another name for satisfied customers, is the most valuable asset, the most precious possession a business can have.

This, I know, sounds simple or academic—perhaps A-B-C's have no place in the alphabetical anagrams of today, and it is doubtless heresy in these hurdy-gurdy times to talk fundamentals, but I do not know how you can obtain an enduring good will unless it is built upon a foundation of simple truth and honest service. At any rate, a realization as to how an industry stands with the public is vital to any discussion of good will building. It's one thing to pick up the ball and run for a touchdown when you have a clear field; it's something else again to have to plough through an opposing team of ringers and bullies, all the while being unfairly penalized, and then when you are in the shadow of the goal post to be deliberately tripped up by the referee. Well, as Andy says, "You sure are in a pickelment."

Broadly speaking, the third day of June in the year 1935 finds the light and power utilities in the midst of the greatest battle in their history—fighting for the very right to live on the merits of their performance in the public interest against the seemingly impossible odds of government as an oppressor, competitor and executioner. Verily the wrath of

MR. McLAUGHLIN

the Gods seems to have descended upon us. The big guns of relentless enemies are thundering our destruction and threatening to blow us to bits. A determined effort is being made to force us to retreat ingloriously from the front we have struggled so hard to obtain and keep—that of supplying the American people with their electrical service. Sometimes it seems that we are in the same fix as Tennyson's Immortal 600. None of us, of course, want to believe that we are with Napoleon at Waterloo—rather do we like to feel that we are riding with Paul Revere, or perhaps, better yet, that we are with Washington at Valley Forge; however, in any case we must face the facts as they exist and not as we should like to have them.

Throughout the country today the light and power utilities are "on the spot." They are being bombarded with charges of high rates and watered stock. The people are told that the power companies have betrayed their trust, that regulation has utterly failed and that they have been robbed right and left. Some of the most radical even picture the electric utilities as the root of all evil. Charges, insinuations and innuendoes of one kind or another have been made, all calculated to inflame the public mind against private ownership and in favor of public, or what may more properly be called political operation.

Now there can be no doubt that the misdeeds of some have been stretched by the demagogue, in appeals to passion and prejudice, to brand the many, with the result that confidence of people in electric utilities has been shaken. It may be true that some in the industry lost the ball in a morass of stock manipulation and tried to outdo the ancient Egyptians in pyramiding, but because there are racketeers and highway robbers it isn't asserted that all people are dishonest and public menaces; because mayors of some cities and others who hold high places in the body politic betray their public trust it isn't concluded that all men in public life do so; one bad egg in a basket doesn't mean that all of them are bad.

Why, then, just because some went haywire and failed to live up to their responsibilities should the whole light and power industry be thus branded and crucified? Many power companies have stuck to their knitting in an honest endeavor to live up to wholesome objectives and to render a worth while service. Nevertheless, a whole industry has been sentenced as guilty without a fair trial. I am satisfied that people generally do not realize what the utilities have done to advance their welfare. However, regardless of the reasons or the lack of reasons for it, public opinion is today challenging the good faith and the sincerity of purpose of the utilities.

The siren song of the advocate of public power is that the day of private operation is over—that only with public ownership can cheap rates be obtained and the rights of the people protected. The inference is that all is wrong with private operation and all is good with public ownership. Adherents of public operation are seizing the present, when

the utilities are under fire, as the psychological moment for selling their wares, and we must admit that under the sponsorship of government and with great favors from the "dough" boys they are doing a pretty good job of it. However, a lot of their enticing and alluring boasts smack of obvious propaganda and some day it will come back to haunt them as "Chickens come home to roost."

As we meet today, quite naturally the thought uppermost in our minds is, where do we go from here? We are interested in discussing the causes of our difficulties only in so far as doing so will help us effect a cure. It is not hard to state our task. Boiled down, it is simply that we who have pioneered the great electrical development of the past must convince the American people that we are the ones best qualified from every standpoint to further advance their economic and social welfare by being permitted to continue to supply their electrical service. The real problem is to determine what things it is necessary for us to do and how to do them in order to preserve our place in the picture.

In view of our present predicament, some of the specific things in the interests of good will building and self preservation I suppose we would like to know are: How to get out of the garbage can where the self-seeking politician thinks he has us properly buried—how to get out of the doghouse where a misinformed people have put us—how to reform the reformers—how to combat the barrage of prejudiced and anti-power company propaganda aimed at our destruction—how to swim against the tide of public power with a ball and chain around our ankle—how to regain a somewhat lost and somewhat stolen public confidence—how to disabuse the public mind as to popular fallacies in reference to the merits of government in business—how best to live up to our responsibilities as trustees of invested savings—how best to discharge our obligations to customers and employees—how to have our case settled on its merits, and so on.

Some may feel that by some hokus-pokus—some happenstance—some stroke of good fortune, or through the magic of our product, the industry may be able to ease out of its difficulties. This is not clear to me when you have government as a propagandist, regulator, taxer and competitor. In the territory in which our company operates are two famous municipal light and power plants —Seattle and Tacoma. I have, therefore, some idea of what this industry is up against when government goes into the power business on a grandiose scale. You don't have to have a public power project in your backyard to be affected. The ghost of subsidized power will haunt you even though you may not be in the woodshed in the Valley of the Yardstick.

Under such conditions, I think you will admit that our work is cut out for us. We are confronted with the most difficult and gigantic task that ever faced a great industry, one that challenges our best thought, tests our courage, demands an inspired leadership, a fighting spirit, a united front, a concrete and concerted plan of action. Let's have the courage to do as we think and to think and act in the best interest of the future of the American people, our customers, stockholders, employees—we serve them all; each imposes on us responsibilities, as trustees, that we must honestly and satisfactorily discharge or became Benedict Arnolds. This is no time for pussyfooting; we have no time for mud slinging or whimpering about the wrongs being done us. We must undertake the greatest selling job in history under the worst sort of competitive conditions. We must win out on the merits of our cause because the welfare of the American people demands it.

It goes without saying that you can't build good will by being a money changer in the temple or a racketeer on the King's Highway; you can't build good will by selling an inferior product or by charging too high a price for good service, and that those businesses classed as public utilities are not entitled to the profits of speculative enterprise. Public interest is paramount; it must take precedence over self-interest whenever there is a conflict. The power industry should be effectively but wisely regulated in the public interest.

It would be easy if good will could be obtained by rubbing Aladdin's lamp or through some magic formula, but it can come only from a mutually satisfactory relationship between buyer and seller. Business good will is like a man's reputation; it must be merited and earned—it is hard to get—it is easy to lose—and once lost it is most difficult to regain. Unfortunately, a fool with a stick of dynamite can destroy what it took genius to construct, and malicious gossip can destroy the good name of even a virgin.

The first thing to ask ourselves is: Why is an industry that has accomplished so much for the common good and so extensively contributed to the advancement of the welfare of the people in such disrepute today? Well, we sell a mysterious, invisible product — this tends to make people wonder if they are getting their money's worth. One light and power system best serves a given area and competitive facilities are uneconomic—monopolies breed mistrust. The rivers of the country have been developed as sources of power, thus the agitators howl that God's gift to the people is being exploited for private gain. Our business developed rapidly; people are led to believe that mere bigness is against the public interest. As a whole, the earnings of light and power companies held up well during the depression; therefore the self-seeking politician cries, "Profiteer! Exploiting your customers while the wolf is at their door." Some bungling tycoons went balloon-chasing, forgot their prime purpose as utility operators and went in for stock manipulation—so the demagogue from soap-box and microphone hounds the many with the sins of the few—robbers of widows and orphans—watered stock—exorbitant rates. Then, again, we are human beings, no better, no worse than folks in other lines of endeavor, we are not infallible—we make mistakes, but because we operate light and power companies we are supposed to be paragons of virtue, with an absence of human faults, and the people are led to believe that if we make mistakes we shouldn't be punished or allowed to correct our mistakes, but should be crucified.

Not condoning our misdeeds and with no thought in mind of dodging the just penalties for our own mistakes, it must be concluded that the real root of our trouble is politics. When one realizes how much electricity does for so little cost and recognizes the real vital and grave issues confronting this country today, he is bound to wonder why all the ballyhoo about power and why it is made a major issue in times like these. If power were a big item in the family budget or a magic healer, or if this country hadn't been made a better place in which to live because of what the power companies have achieved, there would be some valid excuse for the goings on. The answer is, of course, that politics, not economics, make power an issue. This great industry of ours is imperiled by political caprice and socialistic urge. For the present we are the fall guys—the victims of a most vicious system that demands its pound of flesh in human sac-

rifice for personal aggrandizement of some politicians. Indiscretion and overindulgence on the part of some in the light and power business may have contributed to our present ills, but it will be just too bad for the American people if politics causes our demise.

If the political bombardment could be stopped all would be quiet on the light and power front. By and large, I don't believe that our customers are dissatisfied with their service and rates, but they are whipped into a frenzy when the spellbinder tells them of the heinous crimes of the private companies—how they are being robbed and exploited, and, not knowing the truth, they are ready to cut our throats and, unfortunately, their own as well.

The only way we can combat this sort of thing is by going to the people with our story; by having them realize that we are honestly and genuinely working in their best interest—by proving to them that we are not public menaces or malefactors—that we aren't as black as we have been pictured—by convincing them that the light and power companies are doing a constructive job in the public interest—that the good we have done far outweighs our delinquencies. The demagogue makes his constituents believe that he is their benefactor. We, with truth as our weapon, must defend ourselves. We must make it unpopular for the politician to unfairly attack us. We have been a political football long enough. Too many politicians have the idea that the way to public office and personal prestige is through vilification and denunciation of the private utilities. It's up to us to reform where necessary, discontinue such abuses as may exist, conduct our affairs so as not to be vulnerable to attack, and, through the confidence of the people in us, force the politician to obtain his meal ticket elsewhere. We have been feeding the mouth that bites us long enough.

Yes, our case must be presented to the people honestly and fearlessly. We are not content to be judged on the basis of distorted facts and the misleading propaganda of those who want to see us hung. No politician permits his campaign for public office to be handled by his opponents—why should we? If we don't present our evidence—our side of the case—who will? A good start has been made in connection with the Wheeler-Rayburn bill; we should carry on vigorously along a broad front both locally and nationally. Stockholders, employees and management should become an articulate, determined, coordinated fighting force, not only in the interests of self-preservation but for the purpose of seeing to it that government adheres to American principles. We should undertake an intensive campaign of enlightenment, using all available means for doing so—newspapers, radio, personal appearances and every other kind of proper and effective medium. However, before we expect too much from the public let's be sure that our own house is in order; let's go to the people with clean hands and with the thought of public service uppermost in our minds. Ours is a public business of limited return, not a gambler's paradise.

As a general rule, we have been too busy perfecting our service and cutting costs to tell our customers about it. We have lacked showmanship and salesmanship. It's one thing to do a good job, but it's another thing to have our customers know and appreciate that a good job has been and is being done. We must not overlook a single opportunity to make it easier for our customers to do business with us—go to the nth degree in simplification of rate schedules—eliminate red tape—get over more definitely to those served how much we appreciate their patronage. We should treat each customer as we would if he had half a dozen places where he might trade if he weren't satisfied with us. We have spent a lot of money and effort making our service reliable, efficient and cheap. As I see it, our job today is to concentrate on making it more attractive and more advantageous for our customers to do business with us.

It isn't enough just to peddle kilowatt-hours. Perhaps we ought to talk less about kilowatts and cents and do some real cathedral building—every man's home a castle—every kitchen a woman's paradise—the fully electrified home our dream—the more abundant life our objective. We have put romance into this business—we have blazed the trails—we have pioneered when the risk was great—we have had idealistic conceptions. Let's talk about them, let's move Edison, Steinmetz and Westinghouse to the front pages of the press which the wizards of frenzied finance have monopolized to our detriment.

Satisfactorily taking care of complaints and seeing to it that our customers are pleased is of the greatest importance; the treatment of patrons by our employees should be audited like our books are audited, meters tested or relays checked. While a satisfied customer is our greatest asset, a dissatisfied one may be our greatest liability. Bills can be used more effectively to show customers how much they are getting for their money instead of leaving them to wonder if they have been overcharged; this, to mention only one thing, by putting a list of electrical appliances on the back of the bill and asking the customer to check off those the use of which is included in his monthly charge for service. Let's lay aside for the moment our slide rules and technicalities and spend more of our time on human equations. We can't become victims of the automatons we have created—this is still a world of human beings where personal feelings and human reactions and not electrical impulses control.

Notwithstanding new deals, raw deals or anything else, we can't escape the fact that our customers judge the company by the meter reader, the cashier, the service man and the other employes with whom they come in daily contact. If our employes are not courteous, capable, efficient, sympathetic and understanding public servants, then we can't expect our customers to be for us. We are no stronger than our army and we can't expect to win out without comrades who are imbued with the spirit of our cause—ready to die with their boots on—loyal to the core—well-trained and determined that our "light shall never fail" to brighten the hopes and illuminate the pathway to better days for the American people.

The air today is full of fantastic tales about the great things which subsidized power from governmental projects is going to do for our people. We are to have the fully electrified home overnight and the next day, Utopia. This would be great, if true. Certainly we who have spent our lives in this business want to see the fully electrified home a reality. What seems to be lost sight of, however, is that cheap electricity means just about as much to the man who hasn't the appliances essential to its liberal use as cheap gasoline means to the man who hasn't an automobile. Of course, cheap electricity and cheap gasoline are in themselves inducements to greater use, but the family must have the electrical appliances and the family must have the automobile before the benefits of cheap electricity and cheap gasoline can be obtained.

It would seem, therefore, that the real problem, the big thing right now, is to provide the home with electrical appliances and equipment. To do otherwise

is to put the cart before the horse. This is where our customers need help, and we can get good will by helping them. Of course, rates must be competitive, but by and large it is not the cost of operating appliances which is the stumbling block to increased use of electricity in the home. Our domestic rate schedules are so designed that a customer automatically gets lower rates for increased use.

For example, take the case of our company, the Puget Sound Power & Light Company. If today all of our residential and farm customers had, in addition to present use, an electric range, electric water heater and electric refrigerator in their homes the average customer cost for electricity under existing rate schedules would be less than 1½c. per kwhr. On the other hand, it would cost our customers approximately $50,000,000 at present prices to put these major appliances in their homes.

To obtain greater home electrification appliances must be made available to the people on such terms as will come within the reach of the average family. The automobile industry has done a marvelous job of selling; we must outdo it. Instead of the slogan "A chicken in every pot"—"An electric range, refrigerator and water heater in every home." Let's go to it in a big way.

As a whole the industry has a good record in reducing the cost of electricity to the customer, all the while improving service. However, with all the talk about cheap power from governmental projects in the minds of the people, rates are going to have to continue to come down if the good will of the customer is to be obtained and held. He has been made rate-conscious as never before and what he wants is lower rates and then lower rates. Rate reductions can best come from increased use. In building good will there is no substitute for good service and low rates.

Another job that has fallen to our lot is to convince business and people generally that their interests are best served by fighting the aggression and expansion of government in business shoulder to shoulder with us. Folks must come to realize before it is too late that the advantages which a governmental agency has in going into the power business, such as free use of taxpayers' money, tax-exempt securities, freedom from taxation, and so on, are likewise applicable to other businesses. There is no drawing the line. Like the ravaging flood, government in business sweeps before it all private business in its way. Like the raging forest fire, it is no respecter of property rights or the kind of trees that may be in its path. If unfair governmental competition can destroy the light and power companies, then unfair governmental competition can likewise destroy any other industry in precisely the same manner. It's a case of who's next. Subsidized governmental competition not only steam rollers the industry directly in its way, but it menaces all other industries whose operations are affected or whose products are displaced.

People must appreciate that when government, whose prime function it is to govern, goes into business as a competitor with its citizens there results a destruction of private business, of property values, and the undermining of government itself. I am satisfied that if the people of this country realized where government in business was leading them there would be an end to government in business. Russia today is a fair sample of what government in business does to a country and its people.

We must explode the yardstick fallacies. We know that there is no way the government can establish a fair yardstick to judge the merits of the performance of private enterprise by going into business, because it does so on the basis of self-made advantages. The important thing is to have the man in the street understand this. Behind government in business is government itself—all-powerful and determined that its business ventures shall make a showing. Everybody should know that these so-called public power yardsticks are, after all, candy sticks for the politicians and broomsticks for the utilities.

Imagine the fix people would be in today if they had waited for the government to pioneer the development and use of electricity. Have not the people of this country been greatly benefited because thousands of enterprising and courageous citizens have used their brains and ability, backed up by hard work and their savings, to make cheap electricity available for many uses over wide areas? Through years of hard sledding and in the face of difficulties private enterprise has continued making electricity available to more people for more uses at decreasing rates. It has done this without the benefit of government subsidy—it should not now be destroyed by governmental oppression. Our safeguard is an informed public sentiment. Public opinion must decide all controversial questions—it is up to us to see that the people know the facts, for then they will be fair.

Under the competitive situation as it exists today we must convince the people that they get more for their money when they deal with us than can otherwise be obtained. This means that we must stress at all times, and try to get people to realize the extent of, the tremendous tax burden we are carrying in our rates which, if our industry were put out of business, they would have to assume in one form or another.

Likewise, it is important that people appreciate the fairness and the desirability, from their own standpoint, of having public power operations taxed and regulated as the private companies are taxed and regulated so that this ultimate end will be achieved. In the interests of the welfare of all, this so-called power issue should be settled on its merits. People are entitled to know the full story as to the advantages and disadvantages of private operation and the pluses and minuses of public operation. In so far as possible the two operations should be put on a comparable basis, each subject to the same searching inquiries, the same taxes, the same regulatory laws and so on. People must also come to the realization that it is advantageous to them to have existing agencies and facilities utilized in distributing power from governmental projects. It would be better yet to have people decide that taxpayers' money should not be used to erect plants with which to destroy the taxpayer; that municipal power plants should not be subsidized by federal grants; neither should tax-exempt securities be available for governmental business enterprises. It is unfair competition when the credit of government is used to finance its business enterprises when such credit is not available to its citizen competitors.

We are today fighting in the front-line trenches. If we don't win our battle, I'm afraid there will be many more in the trenches and 'ere long there will be many a white cross piled row on row, marking the sad end of America as we have known and loved it. We are fighting today not only to preserve the invested savings of millions of splendid, thrifty citizens, and for the right to live on the merits of our performance in the public interest, but for the still bigger thing—the preservation of this country as a land of opportunity, where a free people may benefit from their efforts in proportion to their contribution to the welfare of mankind. Our task is not easy, for first

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The Government's Program of Water Power Development

By Oscar G. Thurlow, D.Sc.
Consulting Engineer

THERE are so many viewpoints to be taken in making a study of the nation-wide government program of water power development that it is best for me to emphasize at the beginning of this article that in reviewing this program from time to time I have been more and more impressed that the electric power industry is a regional business, not national, and that the states which are to be affected by government competition have parts to play in this program, whereas the federal government has no place in the industry outside of the regulation of interstate commerce and the regional coordination of various transmission systems throughout the country. Most of this can be accomplished under the Federal Water Power Act by the Federal Power Commission.

The financing of huge government owned plants or separately operated municipally owned systems are equally illogical, unsound and destructive, and any generating and distributing system controlled by the federal government is bound to fail, as far as adequate service and return on capital investment are concerned, and at the same time these proposed systems will be injurious to the states in which they are proposed to be located. Actually, the taxpayers in these states are going to be hurt more than the security holders of the existing power companies in these states. The development of new industries will be stagnated and the states' revenues which are in danger of being thrown away in some instances amount to more than the states now receive in their total ad valorem taxes.

Yet in spite of this the states which will be affected are standing aside and disregarding their interests in the present program except for an occasional gesture here and there of a local public service commission. Most of the companies under attack are state-wide institutions which have been built up with the help of state legislatures, public service commisions, various municipal authorities, and the investing public of the states in which they are situated. Very little assistance to their development has been given by federal agencies. Their histories show a local demand for institutions such as they are. It is well recognized by those most zealous in making a success of the federal power program that these companies cannot continue to exist without the support of the local people, and as a result of unending attack of federal bureaucrats the average citizen in a state where the government is active at the present time in a power program would like to see his local utility destroyed, or at least he thinks so.

These local utilities have always played an important part in the upbuilding of local industries, but today as a result of federal attack their credit has been injured to the point where they can be of no assistance to new industries or to the extension of old industries. Prior to the depression, power companies were joining in with industrial companies in building jointly owned steam power plants for the utilization of waste gases and waste heat. The companies have literally hundreds of rural electrification projects awaiting relief from federal attack. Today no program of this nature could be carried out in any of the areas where the government is active in its power program.

The government power program as it is being carried out today is in no sense coordinated and is in the hands of various agencies. It is striking that of all the projects now under way or authorized, only two, viz., Boulder Dam and the TVA, have secured congressional approval. The remainder have been authorized and financed by the Public Works Administration without congressional sanction.

The Tennessee Valley Authority is constructing the Wheeler Dam and the Norris Dam on the Tennessee River, and has under discussion the early construction of five more dams on the main stem of the river or its tributaries. The Reclamation Service of the Department of the Interior is building Boulder Dam, on the Colorado River, and has started the Grand Coulee project on the Columbia basin in Washington. They also are building the Casper-Alcova project in Wyoming. The Corps of Engineers is constructing the Bonneville Dam on the Columbia River near Portland, Oregon, and the Fort Peck Dam on the headwaters of the Missouri River in Western Montana. Public Works funds have been made available for the Verde project in Central Arizona, the Loup River development and the Platte River development in Nebraska, and the Greenwood County project in South Carolina. These latter developments are to be constructed by local agencies.

The Tennessee Valley development, Boulder Dam, Bonneville Dam, the Grand Coulee project, and the Loup River development are generally recognized as primarily intended for the development of power, although the benefits to navigation, flood control and irrigation have been advanced by proponents of the government program as justification for the construction of these projects. The Fort Peck project is intended primarily as a joint flood control and navigation development, but it will ultimately have available as a by-product a tremendous amount of electric energy. The Casper-Alcova Dam and the Platte River project are joint power and irrigation projects.

Other such projects are imminent, the principal one being the development of power in the International Section of the St. Lawrence River. Other projects are proposed on the Cooper-Santee in South Carolina, a series of developments on the Missouri River, and also a series on the Arkansas and Wabash. In addition to the Grand Coulee and Bonneville, eight additional projects are contemplated on the Columbia River.

The total capital investment required for this gigantic program will be more than two and a half billion dollars, of which about one-fourth is to be spent for the developments now under way. These figures do not include cost of transmission and distribution systems. These projects will, when developed in accordance with ultimate plans, produce

more than 110 billion kwhr of electric energy annually, of which more than 12 billions will be available from the initial installations. Table I gives details of these total figures, this table being based on published data where available, otherwise upon estimates.

Wilson Dam played no real useful part in power generation, as it was used more to replace fuel generated energy. This fuel would have cost approximately $643,000 per year, which was in a sense the contribution of miners in the southern coal fields to this project.

TABLE I

	Initial Stage of of Projects Under Way		Ultimate Development	
	Investment $	Millions of Kwhr per Year	Investment $	Millions of Kwhr per Year
Boulder Dam	117,000,000	3,240	137,000,000	5,900
Grand Coulee	63,000,000	2,160	204,000,000	11,500
Bonneville	31,000,000	2,360	75,000,000	7,900
Other Proposed Columbia River Dams	.....	...	526,000,000	44,700
Tennessee Valley	333,000,000	3,300	1,316,000,000	25,000
St. Lawrence	.....	...	258,000,000*	12,500**
Fort Peck	72,000,000	400	80,000,000	3,000
Casper-Alcova Project	22,000,000	150	22,000,000	150
Greenwood County, S. C.	2,767,000	100	2,767,000	100
Loup River Public Power District	7,300,000	150	7,300,000	150
Platte Valley Public Power and Irrigation District	7,500,000	125	10,000,000	500
Verde Irrigation & Power Project	4,000,000	Unknown	19,000,000	Unknown
Red Bluff Water Control District	2,600,000	75	2,600,000	75
Total	662,167,000	12,060	2,659,667,000	111,475

*Additional U. S. funds required.
**U. S. and Canadian energy.

One hundred and ten billion kwhr annually is a gigantic amount of power. As compared to this figure, the total central station output for the United States for the year 1933 was 79 billion kwhr. The theoretical cost of energy from these projects will vary above a minimum of about one mill per kwhr. As to the actual cost of energy from government owned plants, the experience of the government at Muscle Shoals is significant. Wilson Dam was completed in September, 1925, with an installed capacity of 184,000 kw and a total investment of $47,000,000. Between that time and May 31, 1933, the approximate date on which the TVA Act of 1933 was passed, the fixed charges, operating expense and maintenance of this plant amounted to $20,000,000, and during this period a total of 2,358,000,000 kwhr was generated. The unit cost of this energy was 8½ mills per kwhr. The government received a total of $4,978,000 for this energy on the basis of fuel replacement value, leaving a deficit of approximately $2,000,000 per year. During this time

Each and every one of the above-named projects, and every proposed unit of these projects, with the exception of the St. Lawrence project, is obsolete today from a power standpoint, and each one is bound to become a white elephant from a national and more particularly from a local standpoint. The St. Lawrence project, on account of the regular flow of the St. Lawrence River, must be utilized largely for electro-chemical and electric furnace industries, which must be located at the site, and to be economical a better international agreement than anything which has been recently proposed must be arranged with Canada. Furthermore, improvement of the St. Lawrence River to a navigable depth of 28 ft., which is a part of this project, will so disturb existing trade channels that this is no time to consider this project.

All of these projects will seriously disturb the broad plans for transmission systems of central station companies which will be affected by them, and many transmission lines now existing will be rendered obsolete by the government program.

Every kilowatt-hour which will be produced by any or all of these projects will be surplus, not only from a local, but from a national standpoint. Load conditions in the various areas which will be affected do not justify the addition of a single kilowatt of capacity, regardless of cost, at the present time.

Considering some of these projects from an economic standpoint, I will take first the Tennessee project.

The existing government owned facilities at Muscle Shoals have a present capacity of 100,000 kw. The proposed system, when Norris Dam and Wheeler Dam are completed, will have a capacity, according to testimony of government engineers, or 200,000 kw. The cost of this additional capacity at Wheeler Dam and Norris Dam, and the connecting transmission lines, is approximately $80,000,000. The government engineers have testified that power will cost approximately 3 mills per kwhr at the switchboard of their plant, but if proper allowance is made for total capital investment, interest charges, amortization and depreciation, the cost will be approximately 4¾ mills per kwhr.

The Tennessee River flows through several coal fields which produce high grade coal and competitive steam plants located in the neighborhood of these coal fields will deliver power at Knoxville, Chattanooga and Paducah at from 3½ to 3.9 mills per kwhr.

The Boulder Dam project is rapidly nearing completion and when finished will be capable of delivering a surplus of nearly 5 billion kwhr to the southern California territory, which is more than the companies in that territory have been able to develop as a market in fifty years. The delivery cost of this energy will be approximately .6 mills higher than the cost of producing the same energy in oil-fired steam plants in the Los Angeles area.

The Bonneville project on the Columbia, near Portland, is a tremendous project which will produce around 2¼ billion kwhr from the initial project, and ultimately 7½ billion kwhr annual output. There is practically no local market for an amount of power such as this, and government engineers are discussing a sale figure of approximately 1.2 mills per kwhr to induce electric furnace operations to locate in that vicinity. Freight rates, cost of assembly and delivery of finished products, will always be a serious handicap to this development, and even though it is a low-cost project, it cannot compete with

projects like the St. Lawrence or large steam plants properly located at tidewater for low cost assembly and delivery of finished products.

Several of these projects are being built in geological measures which are questionable from an engineering and industrial geologist's standpoint, notably, Norris Dam, Bonneville, and Fort Peck. Even if there were a local demand for the power which will be produced at these projects, it is very doubtful whether there is justification in taking the risk which is being taken in their construction.

In this entire program the United States Government is now competing against its citizens in the power business in various parts of the country. It has under consideration other projects which will widen the field of such competition. It would seem reasonable to expect that such a vast project would be based on a carefully thought-out economic policy which would have as its principal object the protection of the interests of the three classes of people which will be affected, viz., power consumers, investors, and taxpayers. Even a casual analysis of the program reveals the fact that no such policy exists. No two of the various developments are being handled in the same way, and not one of the developments is economically sound from the interests of these three classes of people. The only consistent aspect of the administrative policy of the government is that in every section of the United States the taxpayer's money is being expended and an attempt is being made to destroy the private utility industry by unfair competition of the government which it helps to support.

While the utilities have much to fear from this program, they will doubtless survive, as their work is being carried on on sound business principles and the government program is economically unsound. As government expenditures for these projects begin to taper off state authorities will wake up to the fact that the local utilities are among their greatest assets, and I look to the states as political bodies to come to the help of the utilities in the near future. Furthermore, some of the strongest economists and engineers in government service are not believers in government operation of utilities, and their ideas are beginning to filter into federal plans. But for generations to come the utilities are going to have these government owned white elephants in their midst to seriously harass them in their financing and planning for the future.

Accident Prevention and Insurance

By E. R. Kropp

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Sixth of a series of articles sponsored by the Accident Prevention Committee, Edison Electric Institute, W. A. Buchanan, chairman.

THE relationship between accident prevention and insurance is a very close one, since insurance is designed to pay a financial loss which, strictly speaking, in most cases is due to or results from a lack of accident prevention or the failure of accident prevention plans.

While accident prevention has a direct relationship with practically all forms of insurance, it is desirable for the present purpose to discuss only those forms of insurance which a corporation or other large employer must carry to protect against losses resulting from personal injuries arising out of the failure to accident prevention methods.

Most of these personal injuries and fatalities among employees occur while engaged in the customary duties of their various occupations. All but four states in the Union have compensation laws providing for payments to injured employees or their families, but the amount of these payments varies under the different laws and, as a result, the cost of insurance likewise varies. This, however, is only one element in establishing insurance rates, a more important element being the amount of actual payment of losses for employee injuries. Hence the prevention of accidents to employees is one important way in which the cost of this insurance can be reduced.

The establishment or setting up of insurance rates by the rate-making body is a very scientific and technical procedure and it must be understood that the basic rate established by this body really represents the average risk, as the rate is arrived at by using the average experience for each industry. Any employer whose annual premium is $500 or more is entitled to an individual rating known as "Experience Rating" since it is believed that a risk producing a premium of that size is large enough to be considered separately and apart from the average risk. This experience rating is computed by comparing the individual risk to the average risk represented by the basic rate and, of course, when the experience of the individual risk or the amount paid out in claims for or by the individual risk is compared to its premium computed at the basic rate, it will either be better or worse than the average. If it is worse than the average risk as shown by this comparison, a debit or increase in rate is applied, but if better than the average, a credit or reduction in rate is allowed. This same principle applies even though the concern carries its own insurance, because an insurance tax must be paid by such self-insurers and, since the tax is a percentage based upon premium, it is necessary to know what premium would apply to a self-insurer. Naturally, however, the amount paid out for injuries would be the most important item to a self-insurer.

In the field of compensation insurance, therefore, accident prevention is extremely important. Accident experience not only affects the basic rate for an entire industry, but it increases or reduces the basic rate of an individual risk.

Accidents which result in injuries to persons other than employees affect the cost of public liability insurance in about the same manner. A concern buying this form of protection finds in due time that its rates are decreased or increased, depending wholly upon whether its experience has been good or bad. There are about as many kinds of public liability insurance as there are ways of getting injured, and an accident prevention program designed purposely to protect the public must be very comprehensive. The regular examination or inspection of buildings, furniture and fix-

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Findings of the Federal Trade Commission

By Bernard F. Weadock

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An address before the Second General Session of the Third Annual Convention of the Edison Electric Institute, Atlantic City, N. J., June 3rd, 1935

THE opponents of privately owned and operated electric light and power companies rejoice in the "findings" of the Federal Trade Commission's eight-year investigation of the industry. Well might they do so. The "findings" are couched in language of the speeches of anti-utility Senators and Congressmen which have appeared in the *Congressional Record* over a great number of years. A comparison leads one to the inevitable conclusion that the investigation was predestined to be a propaganda vehicle to further the whims and fancies of those who would destroy the American system of private business for private profit. Those who were instrumental in having the investigation inaugurated to further their concepts of public ownership and who were so conspicuous during its conduct in "assisting" the Federal Trade Commission point with pride to the contents of the final report of that body.

The fair determination of an economic question is at best difficult even when approached with an impartial and open mind. When, however, that judgment is prejudiced or biased, the solution of the economic question will reflect such prejudice and bias. The Federal Trade Commission is no exception to this rule. It patterned its conduct of the investigation of the electric light and power industry in spirit and practice after the manner of a Congressional inquisition and not according to the time-honored proceedings of a judicial or quasi-judicial body. It would seem that the Commission had as its only purpose, despite its protests to the contrary, to besmirch this industry to the degree demanded by those who sponsored the investigation.

Let us inquire into the record to determine the accuracy of my statement. You will remember the presence of Federal Trade Commission agents, examiners, attorneys and accountants in the offices of the companies examined. You will remember that your files, letters—company and personal—records, minutes, vouchers and books of account were demanded and thoroughly examined. You will recall too the attitude of those examiners, accountants, attorneys and agents who professed that their duty was to make a full, fair, and impartial investigation. The associations and companies turned their records over for examination. In the end, not a single company refused access to the records and correspondence. The industry cooperated wholeheartedly with the Commission in the honest belief that a full, fair and impartial report would be made, believing, as they had a right to believe, that if this industry were honestly shown before the public gaze that its record would compare favorably with any industry in the nation.

MR. WEADOCK

When the examiners had returned to Washington and their reports were sent to the companies for examination, all company officials were shocked to read in such reports distorted facts, false theories, innuendoes, insinuations, academic theories and bitter tirades against the customary, usual and approved methods of transacting business, and that such reports were devoid of all constructiveness or economic study of the transactions so freely condemned. The receipt of these reports so firmly shook the faith of the executives and shattered their hopes of a fair investigation that they, for the first time, fully realized that it was but another investigation seeking "dirt" to besmirch the industry.

Upon invitation of the Commission, conferences were held prior to hearings to call attention to any factual errors in the reports. These conferences were upon the reports as submitted to the company. Discussions were often hot and bitter. The Commission's examiner or agent was usually well sustained in his interpretation and conclusions as contained in the report, regardless of how erroneous they might be.

The investigation was "original" in that the opinion of an examiner, no matter how inexperienced or unqualified, was adopted by the Commission with a finality that rendered decisions and rulings of the United States Supreme Court, State Supreme Courts, the Internal Revenue Department, State Utility Commissions, and other informed and intelligent departments mere scraps of paper. In other words, the opinion of the examiner, no matter what his motive or his qualifications, was substituted for the law of the land and the knowledge, experience, and learning of many men.

Of the total number of the personnel of the Federal Trade Commission engaged in the investigation, approximately 85 per cent were without knowledge or training in the utility business. Many of the staff so engaged were never employed in any commercial or industrial business. The reports of these men were considered authoritative and authentic, and constitute the basis for the indictment of this industry.

Public hearings were held and conducted as an ex parte proceeding. Perhaps it might better be described as a "public disclosure" of the Commission's interpretation of the irregularities claimed to exist in the industry. Rules of evidence were conspicuous by their absence. "Experts" were qualified as experts by the fact that they were employed by the Commission. Opinions of the examiners and agents were considered pertinent facts. Mere assertions were elevated to the dignity of best evi-

dence. Unsigned and unidentified letters, letters of dead men, selected excerpts of letters removed completely from their context, or the mere opinion of an individual was accredited with sufficient weight to condemn the industry. Newspaper articles were likewise considered evidence reflecting upon the industry, although the writer or author never appeared for examination or cross-examination. Insinuations, inferences, deductions, conclusions and opinions of Commission's counsel and examiners were accepted as conclusive evidence of the wrong of the thing charged.

Propaganda of the well-known "unholy alliance" opposed to the industry were accepted and the contents of such pamphlets and papers were considered conclusive evidence against the industry.

The companies and associations were represented by counsel at such hearings. Strenuous objections were made to the contents of the reports and the contents of other material, but such objections were brushed aside. Cross-examination was a matter of privilege, not of right: As the Commission itself says, "There was little use made of this privilege (cross-examination). The company representatives were also allowed a reasonable opportunity to put pertinent testimony of documentary evidence in the record." The extent to which this "privilege" might be exercised was limited and restricted by what the Commission determined to be "reasonable." The companies never did accept the reports as accurate. Many voiced strenuous objections, only to be silenced.

When we endeavored to introduce into the record material testimony, we were confined and restricted to what the Commission permitted to be introduced. When I insisted upon a full opportunity to present important material, documentary evidence, the Presiding Commissioner excluded that testimony and commanded the court stenographer to cease taking my argument. The testimony which was introduced in explanation and justification has been practically forgotten in the summarization by the Commission of its investigation. Time will not permit of further illustrations, but I believe sufficient has been stated to convince one of reasonable fairness that the investigation might well be classed as one conducted in the Middle Ages, or even a modern Senatorial investigation where the principal "facts" dug up are covered with dirt—to be thrown at a subsequent time for an obvious purpose.

As an adjunct of such hearings, a newspaper summary containing the "high spots" of the report to be released—there have been 264 releases to date—was issued to the newsmen, who accepted it with full faith and credit. Such summaries were prepared to stress the bad or the irregular and omit the good and the customary.

To say that the investigation has been completely devoid of value to the public and the industry would be an error. The progressive companies have successfully improved such unusual conditions as justified fair criticism and would go still further in their plan if they could be encouraged by less drastic and more sensible legislation. On the other hand, the character of the investigation has wrought an irreparable damage to a basic industry which, in the main and on the whole, satisfactorily performs a public service under public regulation.

The Federal Trade Commission investigation is presumed to constitute an indictment of this industry. Let us inquire as to whether such reports constitute a true indictment. The Senate Resolution commanded the Commission to determine the advantage or disadvantage of the holding company.

Selection of Companies

Everything that the Commission has brought out has been judged by its own standards of ethics colored at all times by what would make a good news story. Of economic results the Commission's final summary has been woefully silent. It has completed its investigation without a true evaluation of the accomplishments of the electric industry and has confined itself to criticisms of little-understood bookkeeping and accounting. It states that it has examined 18 Holding Companies, 42 Sub-Holding Companies and 91 Operating Companies. The companies examined were hand-picked and represent about 41 per cent of the holding companies and 5½ per cent of the operating companies, and in point of output, less than 54 per cent of that of the private companies. Particular companies so selected were generally known to the industry as examples of what a public utility holding company should not be. This is best attested by the great number of them now bivouacked in bankruptcy and receivership. In fact, as soon as the Commission heard of any company going into bankruptcy or receivership it hustled its examiners to the scene.

The Commission studiously and deliberately, by innuendo, insinuation and positive misstatement, has attempted to create the impression that the abuses and unsound business practices of a few hand-picked and well-publicized companies were typical of the industry. It attempts to apply such abuses and unsound business practices to the other companies examined and to the industry as a whole. These hand-picked companies were used, in the words of the Commission, "as illustrative or typical examples only." Nothing is further from the truth. A fair, honest, impartial and economic study of the industry would demonstrate beyond any question that the industry as a whole has functioned well and in the interest of the consumer and the investor.

30 Million Dollar "Propaganda" Item

An illustration of the absolute unfairness of extracting a single excerpt from a document, removed from the context, is clearly shown in the matter of advertising and in the charge of the Commission that "barring, possibly, government drives during war-time, it is doubtful whether any publicity campaign ever approached this in variety, extent, comprehensiveness, minute thoroughness of planning and execution and the amount of expenditures involved." (Pg. 60, Vol. 71-A.) The accuracy of that charge rests upon the record. The Commission, in its effort to substantiate that false statement further, states:

> "It is stated that the public utility industry operating under publicly granted franchises (usually exclusive) to serve with light and power expends '$25,000,000 or $30,000,000 a year for public utility advertising. * * *'"

If, instead of inserting the asterisks, the Commission had inserted the language of the exhibit (being Exhibit No. 185), which was, "gas, electric, street car and telephone companies," and the testimony of the witness, who upon cross-examination by Commission's counsel stated, at page 86, Vol. 1 of Federal Trade Commission Reports, that that amount was a very rough estimate, was not authentic, that only a third of the amount applied to the electric light and power industry, and that it covered the amount of advertising that was done to sell ranges, electrical washing machines, gas service, rates, excursions on street cars, long distance telephone service and all that sort of thing, the Commission would have brought out the truth. Instead, the Commission preferred to select the phrase which would support its sweeping and unfair finding.

Construction Services

The Commission has been exceedingly drastic and critical—I might even say violent—in its denunciation of construc-

tion and engineering contracts as performed by the holding company. This principal criticism was directed at a company whose basis of charges was as follows: 5 per cent of the first $200,000 of construction, 4½ per cent of the next $800,000 of such cost and 4 per cent of all additional cost.

It is worthy of note and quite interesting to compare the scale of fees for professional engineering services as officially recommended on Federal and Federal-aid projects by the American Society of Civil Engineers, which is as follows:

"Complicated or special projects such as power plants, etc.," the fees range from 8 per cent of net construction cost for projects $200,000, to 5 per cent of all projects involving $6,000,000 or more.

For simple projects the figure of 5¾ per cent and 4 per cent respectively.

I leave to an impartial and fair tribunal the reasonableness of the construction company fees.

Service Contracts

The Commission requested and the company, at great expense, supplied exhaustive studies upon the benefits of holding company control as reflected in the reduced cost of construction and operation of the operating companies. These facts submitted indicated improvement in service, reduction of rates, construction of efficient plants, the solution of complicated engineering and economic questions, great savings on insurance, taxes and purchases which were passed on to the operating company and reduced the cost of operation. The Commission throughout its reports and publicity releases speaks of the money received by the holding companies for such service, but fails to show the value of that service evident to any who might honestly inquire. Only one report considered these economic features and recognized the value thereof and the reasonableness of the charges made therefor. It is to the discredit of the Commission that this report was never introduced into the record to enlighten a querying public to the true, self-evident facts and economies which the report showed the small operating company received from its parent. The reason this report was not introduced is because the facts therein showed great economies and more efficient operation and improved service over many of the plants which at one time had struggled to serve under municipal ownership. It was said that to have introduced this report into the record would be a reflection by the Commission upon public and municipal ownership.

No proper evaluation of these services can be obtained by merely reciting the cost of such service without a thorough economic and engineering study of the benefits, which it would seem that the Commission has purposely avoided doing.

One conversant with the facts surrounding the operations of the electric light and power companies realizes the advantages and necessity for this type of supervision and the resulting economies, all of which are passed on to the rate payer. That these contracts in and of themselves are not as vicious as the Commission would have you believe is best attested by the fact that the following state commissions have exhaustively examined and reported upon the efficiency of these contracts and allowed the charges made as reasonable and fair:

Arizona	New Hampshire
California	New York
Colorado	North Dakota
Georgia	Ohio
Illinois	Oregon
Indiana	Pennsylvania
Maine	Tennessee
Maryland	Vermont
Michigan	Virginia
Missouri	West Virginia
Montana	Wisconsin

Of particular interest is the opinion of Commissioner Thomas of the State of Oregon, whom no one could ever say was favorable to the utilities. In his examination of the relationship existing between an operating company and the holding company under the service contracts, he has said (Nov. 1, 1934):

"The claim of Byllesby Engineering and Management Corporation that it is in every true sense a management concern, and that it gives valuable services under its contracts, is supported by the record. . . . That the plan, design and construction work of these utilities has been improved and operating benefits and economies have resulted from the services rendered under these contracts is hardly open to question. . . . (In regard to purchasing of materials and supplies through the Management Corporation) this practice results in obtaining quantity discounts and other concessions not obtainable by the operating companies if acting independently. . . ."

Is it to be presumed that the erroneous conclusions of the Federal Trade Commission, seeking to perpetuate its existence, shall take precedence over the findings of many state public utility commissions familiar with the utility subject, with the interest of the localities at heart, and manned and equipped to thoroughly and completely investigate the advisability and necessity for such service contracts and to determine the reasonableness of the charges made.

Write-ups

All figures thus far emanating from the Federal Trade Commission relating to write-ups are inaccurate, undependable and unreliable. In its latest propaganda blast, Release No. 264 of May 28, 1935, a further effort to exhibit the shop-worn propaganda on write-ups is made. The latest release is grossly in error in that it describes the amount of the alleged write-up "on a combined basis." This means that write-ups found in either an operating company, a holding company, or a sub-holding company are multiplied by reflecting the amount of a claimed write-up in each class of companies, whereas it occurred in but one only. Many of the write-ups were reflected on the books of a single company and not on any other book of account of the group or of the system, and yet in arriving at the fantastic figure the Commission quotes it assumes that it appeared in each of the three companies. If the Commission could reduce its alleged write-up figure by 11 per cent between one publicity release on January 10, 1935, and another publicity release on February 5, 1935, it might behoove the Commission, in the interest of fairness and honesty, to re-examine its write-up figure before it releases any more false publicity releases. For a full and complete discussion of the unfair and discriminatory method employed by the Commission in arriving at its write-up figure, I direct your attention to my article on the subject in the February, 1935, issue of the EDISON ELECTRIC INSTITUTE BULLETIN.

Economic Basis for Holding Companies

These illustrations of distorted facts should place one on his inquiry as to the accuracy of the statements of the Commission in regard to other subjects mentioned in the report. If you are still skeptical, let me read what the same Federal Trade Commission said of holding companies when it was conducting an economic and not a political investigation, without the flare of rockets or the beat of the drum:

"The fundamental theory of the holding company is that a single large central organization can furnish more efficient and economical management and service in financing, construction and operation. . . .

"The pressing need has generally been for capital. . . . The means by which these needs have been met is the holding company. . . . The acquisition by such corporations of the control of operating companies made it possible to consolidate previously inde-

pendent operating units to obtain the benefits of larger distribution systems necessary to utilize the production of larger generating stations. . . .

"The individual operating company, with nothing behind its securities but its own developed or prospective earning power, lacks diversity of resources. When it applies to the investment banker for assistance its security issues are comparatively small and relatively unknown to the investing public. Consequently, it is in a poor position to bargain for loans on favorable terms. The holding company meets this situation by substituting for the securities of its individual operating subsidiaries its own stocks, bonds and debentures, backed by the diversified earnings of its underlying holdings."

A few days before the introduction of the Wheeler-Rayburn Bill the Commission emitted a report in which it said:

"The choice between suppression and regulation of holding companies will turn logically upon a balancing of their relative advantage and detriment to the general public. If they provide advantages to the public which can be obtained no other way, then it may be desirable to preserve the holding company in order to preserve those advantages to the public. If those advantages can be obtained in some other way, then the argument for retention of the holding company is correspondingly weakened and the decision will turn more largely upon the eradication of evils than upon the preservation of benefits."

And again:

"The one-tier holding company presents many of the same problems as the pyramided holding company system. If suppression be required as a solution, it cannot stop short of suppressing all forms of the evil."

Then it leaves to Congress whether or not suppression or regulation of the holding company is the preferable policy, and says:

"If holding companies are to be permitted to continue to control and manage groups of operating or producing companies, there are four methods which seem especially to commend themselves for the exercise of Federal jurisdiction. They are:

(1) the taxation method,
(2) direct statutory inhibitions,
(3) a compulsory Federal licensing act,
(4) a permissive Federal incorporation act.

. . . The Commission primarily recommends the first two methods; first, taxation, and second, direct prohibitive legislation."

It may be that the recommendations reflect the speed with which they were made. Pressure—great pressure—was brought to have the final reports ready for this session of Congress. The President of the United States wrote the Commission commending it for the manner and method of its conduct of the investigation and stating that it was of the greatest importance that the final report, with recommendations, be submitted not later than January 1, 1935; Senator Norris demanded more prompt action and that the methods of the Commissions be jazzed up and made more interesting, as the investigation was not getting the desired publicity. The publicity department of the Commission was renovated and became more alert and active in order to get more publicity for the investigation and the Commission.

The President of the United States summarily dismissed a Commissioner whom he considered unsympathetic to the investigation. Repeated demands by Senators and Congressmen to expedite the findings were made to have the report available when the predetermined Wheeler-Rayburn Bill was in the process of being drafted. Under this combined pressure the Commission has scrupulously avoided any reference to real facts reflecting credit upon the industry and has rendered a report, the gist of which is the strangulation of the industry by excessive, exorbitant, discriminatory and unreasonable taxation, or, in the alternative, abolition.

Statements of the Commission Inconsistent with Its Conclusions

By publicity release No. 264, issued May 28, 1935, on Chapter XI of the final report, which remains unpublished and safeguarded from examination or investigation in the archives of the Commission, another blast of propaganda for the Wheeler-Rayburn Bill received wide public notice in the press throughout the country. The Commission states that "it appears" that the holding companies performed functions such as the promotion of more rapid extension and improvement of small or undeveloped operating utilities than would have been in many cases possible as independent units; that combinations of smaller utility corporations into one or more larger organizations made possible the advantage of physical interconnection, large-scale production and unified management; that skilled management and expert engineering were concentrated on the problems of construction, production, transmission, distribution and utilization of electric energy; and that service was improved and extended, consumption increased and the costs of production were reduced, with a consequent possibility and a tendency toward lower rates notwithstanding accompanying financial practices which had an opposite tendency as to rates. But characteristic of the reports throughout, it is stated that this was done as a means of increasing the profits of the holding company. They also state that through holding companies the investor could obtain a diversity of risk, yet reap some of the profits of equity investment. This is the limit to which the Commission cares to speak well of the industry, for the rest of the release is a condemnation by repeating the sing-song of alleged wrongdoings which were contained in the 263 publicity releases preceding this one.

As further proof of the deliberate maliciousness and downright unfairness of this autocratic and bureaucratic body to whom the fate of many industries is assigned by its act of creation as to their "fair practices," price fixing and methods of doing business, I desire to call your attention to an outstanding fact which should condemn the Commission in the eyes of the people. In Chapter IV of Volume 72-A of its final report, issued as late as February 2, 1935, the Commission enumerated at least 12 advantages of holding companies which are completely ignored and forgotten in its final summary of the advantages and disadvantages of the holding company. They are as follows:

1—That there exist "certain economic needs of small operating companies for financial engineering and managerial service."

2—An important "financial function of a holding company is that of temporarily financing the current capital needs of its subsidiaries, pending permanent financing."

3—That holding companies are able to furnish funds for senior security financing where market conditions are unfavorable. This applies especially to "companies whose earning power was weak so that their securities were not in favor with the general investing public."

4—That the furnishing of common stock capital would seem normally to be the function of a local capitalist, but as such capital (local capital) is not always available, the holding company acquires the control of the company and furnishes a large part of the common stock funds.

5—An important process carried on by holding company managements in many cases has been "the enlargement of the operating unit by mergers, consolidations and the physical connections of different properties by transmission lines to such degree as to overcome these disadvantages." (The operating company's difficulties in selling securities at advantageous prices.)

6—Speaking of certain mergers and consolidations in one of the systems examined, the Commission said: "By this process these operating companies were increased from four small units in 1910 and consolidated into a 192 community unit in 1929, of which 183 were on one continuous electric system."

7—Spreading the irreducible overhead ex-

pense over a much larger volume of business and thereby economizing that overhead.

8—The second effect of mergers and consolidations by holding companies has been "that as the size of the unit and volume of business increased and the necessity has arisen from time to time of providing the enlarging unit with additional generating capacity, opportunity has been made to apply on these units progress that had been made in the design of generating equipment, etc."

9—This process accounts for the marked decrease noted by the U S Bureau of Census in the number of electric utility establishments. The number decreased from 6,542 in 1917 to 3,429 in 1932.

10—That the application of progress in the design of generating equipment has been made to such an extent in these plants that the station output cost has been greatly reduced.

11—Centralized purchasing for the entire group, with the maximum quantity discounts obtainable for such operating volume under holding company or large operating company contracts with the manufacturers. Where the holding company passes all of these quantity discounts on to the operating company, such centralized purchasing benefits them and potentially the consuming public.

12—Centralization of the placement of insurance and the handling of claims in the hands of a specialist makes possible lower premiums and more favorable settlement of damage claims.

Again, in Chapter V of its final report, issued February 5, 1935, at page 74, the Commission speaks of the benefits of consolidation and mergers effected by holding companies and enumerates the following benefits:

1—Simplification of its investments.

2—Facilitating of its financing for the increased capital requirements of its companies.

3—Economy of operation in the production and distribution of electrical energy by eliminating duplicate generating and transmission facilities.

4—By scrapping of obsolete facilities, with a consequent saving in capital expenditures; consequent saving in operating costs; greater utilization of waste power and potenial power.

Chapter IV of its final report deals with the functions of sub-holding companies and I have paraphrased the five principal functions assigned for their creation as found by the Commission:

1—To preserve to the controlling interests some privilege or advantage conferred upon the corporation by state legislature.

2—To meet some provision of a state or national law or the provisions of some contract.

3—In connection with income tax laws.

4—To segregate acquired assets against which there is a purchase money lien.

5—For the purpose of qualifying as full-paid and non-assessable stocks to be issued in connection with the sale of other securities.

One reading the record, the reports, and the final reports must be convinced that it was the deliberate purpose to eliminate all comment referring to the constructive work accomplished. This investigation is typical of the exercise of inquisitorial powers of commissions, bureaus and bureaucrats. The Federal Trade Commission is composed of five commissioners, all of whom are men of integrity. I am certain that none of them read the record as made by their subordinates. The final report is made to appear to represent the judgment, opinion and wisdom of the commissioners; whereas, in fact, it was prepared by subordinates in conformity with the bureaucratic practice existing in Washington. It is signed and becomes a public document, when in truth it reflects the prejudiced and biased opinions of subordinates, many of whom have lived the sheltered life of a government employee and are not familiar with the rules and customs of the industrial, commercial or business world.

Can it be that the method of conducting an investigation as outlined here entitles the Commission to the respect, confidence or trust of general industry?

In Chapter XIV, page 2, of the final report on the electric utilities, the Commission says:

"A somewhat different set of facts and legal questions arise concerning holding companies outside of the utility field. The Federal Trade Commission has had considerable and varied experience in the matter of general industrial holding companies, but makes no recommendations herein relative thereto, as the resolution of the Senate only calls for the facts, conclusions and recommendations as to utility holding companies. However, it is believed that such holding companies and the elaborate and complicated systems disclosed in this investigation either present or indicate the main types and salient features of holding company abuses and problems."

This is plain language and means that holding companies outside of the utility field are equally as elaborate and complicated and subject to the same abuses and problems as the holding companies in the public utility field.

If this is not sufficient evidence to convince general industry that there is a concerted move afoot to disrupt and destroy the American form of transacting general business and that our industry was chosen as the forerunner of others only because it was more vulnerable to attack, I want to call your attention to the fact that the Wheeler Bill, Section 30, Title I, page 90, provides as follows:

"The Commission (Federal Power Commission) is authorized and directed to make a study of the functions and activities of investment trusts and investment companies, the corporate structures, and investment policies of such trusts and companies, the influence exerted by such trusts and companies upon companies in which they are interested, and the influence exerted by interests affiliated with the management of such trusts and companies upon their investment policies, and to report the results of its study and its recommendations to the Congress on or before January 4, 1936."

This language resembles Senate Resolution No. 83 and appears to be another battering ram to carry the "fight" from the utilities to the next industry to be selected by the "firing squad" for execution. Let us hope, for the benefit of all, that that investigation is not referred to the Federal Trade Commission.

In the chapter entitled "Conclusions and Recommendations" of its final report, the Commission makes the following statement:

"Nevertheless, the use of words such as fraud, deceit, misrepresentation, dishonesty, breach of trust and oppression are the only suitable terms to apply if one seeks to form an ethical judgment on many practices which have taken sums beyond calculation from the rate paying and investing public."

I am unable to find more suitable words than these of the Commission—fraud, deceit, misrepresentation, dishonesty, breach of trust and oppression—and I adopt them and apply them in characterizing the investigation by and the "findings" of the Federal Trade Commission.

The Institute's Third Convention

(Continued from page 178)

cussion), and the report of the Prize Awards Committee by Mr. Frank W. Smith, Chairman of the Committee. Mr. Guild told of the remarkable sales work of his organization, Mr. Funk discussed the effect of service standards on system design, while Mr. Penn's subject was the modernization of existing plants. The other papers and addresses presented at the Convention are published in full in this issue. They include those by President McCarter, Managing Director Weadock, Messrs. Frank McLaughlin, Merle Thorpe, Frank A. Newton for the Rate Research Committee, H. W. Fuller, Ezra B. Whitman, Hudson W. Reed, George M. Gadsby and J. G. Holtzclaw.

Rate Making By The TVA

By Major Ezra B. Whitman

Whitman, Requardt and Smith, Baltimore, Md.

An address before the Fourth General Session of the Third Annual Convention of the Edison Electric Institute, Atlantic City, N. J., June 5th, 1935

AT the beginning, I want to make it perfectly plain that I am an advocate of the development of the drainage areas of our rivers so as to secure the greatest benefit to all the people by the full utilization of the waters of a river for every purpose. I was employed in three different cases which came before the Supreme Court of the United States, which involved the use of the waters of three large drainage areas. The first case was in connection with the waters flowing from the Great Lakes in the Lake Lowering Controversy, where the Sanitary Drainage Commission of Chicago was diverting the waters for sanitary purposes for the disposal of its sewage. The second case was that of the Connecticut River for water supply purposes. The third case was that of the diversion of water from the Delaware River by the city of New York for water supply purposes. I mention these cases merely to show that I have had some experience in studying the economic uses of the waters of large drainage areas.

In the Chicago case, I studied the relative value of hydro power developed by the diverted waters in the valley of the Illinois River as compared with hydro development by the same quantity of water at Niagara and along the St. Lawrence River.

In connection with the Connecticut River, the diversion of water by the city of Boston, for water supply purposes, reduced the value of the water power development at Windsor Locks, in the state of Connecticut, and the Master in this case allowed the damages in connection with this power development as the only real damages which had been clearly demonstrated in the case of the state of Connecticut against the state of Massachusetts.

Along the Delaware River, the city of New York, in order to increase its water supply, proposed to divert 600 million gallons of water a day from the Delaware River, and a Tri-State Compact between New York, New Jersey and Pennsylvania contemplated the still further diversion of 900 million gallons a day by the state of Pennsylvania and

MAJOR WHITMAN

600 million gallons a day by the state of New Jersey. All of these diversions were for water supply purposes only and little consideration was given to the other possible uses of this water along the reaches of the Delaware and its branches. The state of New Jersey contended that this water not only should be used for water supply purposes, but also for navigation, water power, sanitation, water supply, recreation, oyster culture and agriculture.

The present Administration, particularly those who are running the TVA, talk and act as though they were the ones who discovered the possibilities of the complete development of the waters of the drainage areas of our large rivers, and that there was no virtue in anyone until they came into power. Even the work of the corps of engineers of the Army has come under the criticism of such an eminent engineering authority as Mr. Lilienthal. That the necessity was previously recognized for a careful study of the uses and the development of our streams, so as to yield the maximum economic use of their waters, is shown by the following quotation from a speech of Herbert Hoover on Aug. 11, 1928, which reads as follows:

"Moreover, the time has arrived when we must undertake a larger visioned development of our water resources. Every drop which runs to the sea without yielding its full economic service is a waste.

"Nearly all of our greater drainages contain within themselves possibilities of cheapened transportation, irrigation, reclamation, domestic water supply, hydro-electric power and frequently the necessities of flood control. But this development of our waters requires more definite national policies in the systematic coordination of those different works upon each drainage area. We have wasted scores of millions by projects undertaken not as a part of a whole, but as the consequence of purely local demands."

Following this statement, the corps of engineers of the Army started a systematic study of the possible economic development of a number of our principal rivers and, in addition to the Tennessee River, I have personally made use of the information their studies have made available on the Potomac, Delaware, Monongahela, Allegheny, Kanawha and Youghiogheny River water sheds. Economic studies of the possible uses of the waters of our rivers began back in the time of George Washington and there have been many reports on this subject made during the last hundred years. The subject is about as old as our country and is not a new discovery since the New Deal.

Now with regard to rate making, I have had some experience in these matters both from the point of view of the public, when I was a member of the Maryland Public Service Commission for six and one-half years; and also, for two years when I had charge of the making of rates for one of the "iniquitous" holding companies. The TVA, in its rate making, has introduced a number of new and novel ideas, many of which are entirely contrary to decisions by our Federal and Supreme Courts.

The first time the TVA rates were challenged was in the case before the Tennessee Public Service Commission at Nashville last October. In this case, the Tennessee Valley Authority submitted a one-page exhibit showing their method of arriving at their announced rates where domestic consumers were to

be charged 3c. for the first 50 kwhr, 2c. for the next 150 kwhr, 1c. for the next 200, and all over 400 kwhr at 4 mills.

In the Tennessee Valley Authority press release of Sept. 14, 1933, when the rates were announced, the statement was made that the rates had been formulated after weeks of careful study, and on Sept. 15 it was further announced that the rates "are based on the Board's policy that Muscle Shoals shall be entirely self-supporting and bankable; in other words, a business enterprise. The computations are based on the best available data and weeks of close study and analysis, and have been subjected to the criticism of recognized rate experts. The figures show that all costs of service are included and, in addition, provision has been made for items of cost not actually incurred, such as taxes and interest, but which were nevertheless included in order to make fair comparison with privately operated utilities for yardstick purposes."

Now let us see just how these yardstick rates were made. In the case before the Tennessee Public Service Commission, the data in Table I were presented in evidence as the justification of the rates previously given.

In the case before the Alabama Public Service Commission, the basis for the rates was entirely changed and the information shown in Table II (Table II begins on next page) was given by Mr. Llewellyn Evans, chief electrical engineer of TVA, as the basis for their rates.

In the first releases given out by the TVA, the price at which power was to be sold at wholesale to municipalities was quoted as $22.50 a hp. year. With the low load factors prevailing in some of the smaller towns, this made the price too high for the towns to pay and the rate was changed to a demand and energy basis as shown in Table III.

Table IV shows how much the Tupelo wholesale rate would reduce the cost of power to a municipality purchasing 2000 kw. of power at varying load factors.

If the computations at Madison were based upon "weeks of close study and analysis . . . subjected to the criticism of recognized rate experts" and caused the Authority to conclude that $22.50 per horsepower per year was a fair, reasonable, and "strikingly low" rate, it is difficult to see the justification for the Tupelo rate, which is lower by from 23 per cent to 53 per cent, as shown by Table IV.

Table I

Preliminary Cost Computations (Intra-Departmental)

1.	**Valuation:**	
	(a) Wilson Dam Power Plant	$24,375,000
	(b) Nitrate Plant No. 2 Steam Plant	4,800,000
	(c) Other buildings, fixtures and grounds	500,000
		$29,675,000
	Say $30,000,000	
2.	**Fixed Charges:**	
	(a) Interest at 3½ per cent	$ 1,050,000
	(b) Res. for taxes (Retirement of Capital)	233,000
	(c) Depreciation	200,000
	(d) Gross earnings state taxes	150,000
		$ 1,633,000
3.	**Other Charges:**	
	(a) Operation and Maintenance—hydro	$ 150,000
	(b) Overhead—inc. new business	100,000
	(c) Steam plant, added expense running	100,000
	(d) Total generation cost	$ 1,983,000
	(e) Say $2,000,000	
	(f) or 2.67 mills per kwhr at average of 750,000,000 kwhr per year at Bus Bar	
	(g) Nitrate Plant—320,000,000 @ .1c.	
	(h) $1,700,000 for firm power output of	
	(i) 430,000,000 or 3.95 mills per kwhr	
4.	**Transmission:**	
	(a) $50.00 per kw.	
	(b) Interest and redemption	4.3%
	(c) Depreciation	3.5%
		7.8%
	(d) Or $3.90 per kw. per year	
	(e) Operation and Maintenance	$ 100,000
	(f) On 150,000,000 kwhr	.67 mill
	(g) or $2.68 per kw. per year	
	(h) $6.58 per kw. Total—based on 4,000 hrs.	
	(i) Plant cost $8.70 per kw. (based on 195,000 kw.)	
	(j) Transmission $6.60	
	(k) $15.30 per kw.	
	(l) Based on 100,000 kw.:	
	(m) Transmission $6.60 (based on 100,000 kw.)	
	(n) Generation 17.00	
	(o) $23.60 per kw. year	

(For Table II see next page)

Table III

Demand Charge: 90c per kw per month (60 minute interval) plus an
Energy Charge: First 100,000 kwhr per month @ 4 mills per kwhr
Next 200,000 " " " @ 3 " " "
Next 700,000 " " " @ 2.5 " " "
Over 1,000,000 " " " @ 2 " " "

Minimum Bill: The Monthly demand charge, but not less than 60 per cent of the previous twelve months' high demand.

Adjustments: Provisions made for disregarding the demands caused by space heating from October 15 to April 15.

Table IV

30-Day Load Factor	Average Rate in Mills per Kwhr: Sept. 1933 Rate	Tupelo Rate*	Reduction: Amount	Reduction: Per Cent
10%	34.72	16.20	18.52	53
20%	17.36	9.10	8.26	53
30%	11.57	7.24	4.33	37
40%	8.68	6.07	2.61	30
50%	6.94	5.35	1.59	23

*Neglecting difference in demand computations.

TABLE II

STATEMENT OF EXPENSE AND INCOME—WILSON DAM POWER PROPERTIES

Llewellyn Evans Report—Exhibit 76

I.	VALUATION:		
	A. Wilson Dam Hydro Power Plant: Rating 184,000 kw. at 0.8 power factor. Present turbine capacity, 4—30,000 hp. units and 4—35,000 hp. units. Total 260,000 hp. Present value is arrived at by allocating to power the full value of the Power House section of the Dam, including its machinery and the step-up sub-station. Likewise to navigation has been allocated the full cost of the Lock section of the Dam. The Spillway section, joining the Power House and the Locks, and the land for the reservoir are divided equally between Power and Navigation. The historic cost has been used for all items except the excavation and concrete, where prices based on results at Norris have been applied to the historic quantities. The resulting values have been depreciated in a straight line for seven years out of fifty years of life for permanent structures, and seven years out of twenty-five years for machinery and superstructures. The resulting present value for Wilson Dam Hydro Plant		$19,528,806.00
	B. Steam Plant At Wilson Dam (Sheffield Steam Plant): Having normal capacity of 60,000 kw., is given a new value by applying a price of $80.00 a kw. new, and to compute the present value it was depreciated for fifteen years out of twenty-five years, expected life, making present value		1,920,000.00
II.	FIXED CHARGES:		
	A. Depreciation or Retirement:	Annual Cost	
	1. Present value of hydro structures and land, $13,069,793, to be retired in 43 years, (sinking fund method at 3½ per cent interest rate, .010486)	$137,087.00	
	2. Present value of Hydro machinery and superstructures, including step-up transformer station, $6,449,013.00, retired in 18 years (sinking fund method at 3½ per cent interest, rate .04082)	263,249.00	
	3. Present value of steam plant, $1,920,000.00 to be retired in ten years (sinking fund method at 3½ per cent interest, rate .08524)	163,661.00	
	4. Total Depreciation or Retirement Cost		$563,997.00
	B. Interest: 1. In computing interest, the rate of 3½ per cent, corresponding to the maximum bond interest rate set out in Section 15 of the Tennessee Valley Authority Act, is used. Wilson Dam Hydro Power Plant, $19,528,806.00 at 3½ per cent	683,508.00	
	2. Steam Plant at Wilson Dam, $1,920,000.00 at 3½ per cent	67,200.00	
	3. Total Interest Cost		$750,708.00
	C. Tax Equivalent: In setting up a tax equivalent, a rate approximating 12½ per cent of the revenue which would offset the production expense has been applied. The resulting sum to cover all forms of taxes, including the 5 per cent gross earnings tax mentioned in the Tennessee Valley Authority Act. (The tax on transmission lines is included in transmission costs set up below)	240,000.00	240,000.00
III.	OPERATING CHARGES:		
	A. Operation: 1. Operation and maintenance of Wilson Dam Hydro Plant, providing about $70,000.00 for operating labor, $30,000.00		

(Continued on next page)

The municipalities could not buy power at $22.50 per horsepower year and resell it, without substantial losses, at the low domestic and other rates prescribed by TVA. If municipal ownership could not succeed—if the "yardstick" for domestic rates could not be proved—something had to be done about it. So the power rate to municipalities was slashed. To be sure that it would be low enough to permit the municipalities to substitute electricity for coal for house heating, the Tupelo rate disregards entirely the winter demands for heating, fixes only 60 per cent of the previous twelve months' high demand as a basis for minimum payment, and extends the interval for measuring the demand from 30 to 60 minutes.

To return to the bases given out for rate-making purposes in both the Tennessee case and the Alabama case, I will take up the different items presented by TVA.

1. VALUATION

(a) *The Wilson Dam Hydro Plant:*

The Wilson Dam power plant was valued in the Tennessee case by the TVA at $24,375,000. In the Alabama case, this was reduced to $19,328,806. The actual cost of the Wilson Dam power plant as given by the TVA in the Alabama case was $46,950,748. In arriving at the value of $24,375,000 in the Tennessee case, the TVA said that the installed capacity was 195,000 kw. (The actual installed capacity was really 184,000 kw.) They placed a value, pulled out of the air, of $125 per kilowatt of installed capacity, although they had available to them the full and complete costs of this work with all the unit quantities that entered into the construction of this project. And this was after weeks of careful study in order to determine a proper rate base, without which, of course, it is impossible to make rates. So, after weeks of careful study, the TVA experts arrived at the value of the plant by the very simple method of assuming that the installed generating capacity would be worth $125 a kilowatt. As a matter of fact, the plant actually cost over $250 per kilowatt of installed capacity.

A study of the cost of a number of other hydro power projects built by other companies showed that six dams on the Coosa and Tallapoosa Rivers, with an installed capacity of 398,000 kw., cost $160 per kilowatt of installed capacity. Reports to the Federal Power Commission as to the Bartlett's Ferry plant on the Chattahoochie River, where

TABLE II—*(Continued)*

STATEMENT OF EXPENSE AND INCOME—WILSON DAM POWER PROPERTIES

	for maintenance and $50,000.00 for supervision and engineering, and general expenses; among which was $24,000.00 for mosquito control on the reservoir, as shown on the books for the year ending June 30, 1934	150,000.00	
	2. For Steam Plant Operation and Maintenance, when not running but providing for its operation and maintenance as a stand-by	50,000.00	
	3. Estimated actual operation three months at $10,000.00 a month	30,000.00	
	4. Steam Power Fuel for the average generation of 30,000,000 kwhr at .002 per kwhr	60,000.00	
	5. Expense for rental of non-operating buildings, fixtures and grounds	10,000.00	
	6. Total Operation Expense		$300,000.00
B.	*General Administrative Expense:* Arbitrarily estimated at 15 per cent of the above operating expense	45,000.00	45,000.00
C.	*New Business and Development Expense:* Providing for extensive wholesale promotion, but no retail	60,000.00	60,000.00
IV.	TOTAL COST OF GENERATION		$1,959,705.00
V.	CREDIT FOR REVENUE FROM THE SALE OF SECONDARY HYDRO POWER: In this statement Wilson Hydro Plant is conservatively given a firm power rating of 45,000 kw., which, with the 60,000 kw. Steam Plant makes a saleable firm capacity of 105,000 kw., which will generate with a practical certainty over a period of years 500,000,000 kwhr as firm power, load factor 50 per cent. In addition to which there is over 780,000,000 kwhr of water power which will go down the river and be wasted unless sold at a cheap price. We are estimating that part of this can be sold and credited the cost of generation as follows:		
	320,000,000 kwhr @ $ .001	320,000.00 (red)	
	80,000,000 kwhr @ .0015	120,000.00 (red)	
	Total credit for Secondary Sales		440,000.00 (red)
VI.	NET COST GENERATED POWER		$1,519,705.00
VII.	TRANSMISSION COST: The value of the transmission system, proposed to distribute this power wholesale, consists of the lines and stations already acquired in Mississippi; those proposed to be purchased in North Alabama, together with some 400 miles of new lines and nine new substations, having a present value altogether amounting to $5,000,000.00.		
A.	*Fixed Charges:* The fixed charges for the transmission system allowing 3½ per cent interest, 25 year retirement rate of .92567, tax equivalent of 1.5 per cent are	$378,350.00	
B.	*Operation and Maintenance of Transmission System*	145,000.00	
C.	*Total Annual Transmission Cost*		$523,350.00
VIII.	TOTAL COST OF DELIVERED POWER		$2,043,055.00
A.	*Estimated Revenue:* Revenue to be derived from the sale of the output of the Wilson properties when loaded to 105,000 kw. is here computed by figuring bills of an assumed list of fifty-seven wholesale customers whose billable demand		

(Continued on next page)

a 45,000-kw. plant was constructed, show a cost of $190 per kilowatt.

The testimony of Dr. Morgan before the House Committee, after charging $8,000,000 of the cost of Norris Dam to flood prevention and $5,333,000 of the cost of Wheeler Dam to navigation, with a total installed capacity of 368,000 kw., as testified by Dr. Morgan, the cost for the production of power alone of these hydro projects would be $160 per kilowatt of installed capacity. With no reduction for flood prevention and navigation, the cost would be $196.

In the Alabama case, an entirely new valuation of Wilson Dam and power house, of $19,528,806, was reached. The total cost of the dam, as already stated, was $46,950,748. In the Alabama case, $14,273,444 were allocated to national defense, $13,148,498 were allocated to navigation.

TVA made a so-called reproduction cost estimate at present-day prices of Wilson Dam and power house. The machinery and mechanical equipment, which were probably purchased and installed about 1925, were valued for reproduction purposes at the present time at their original cost. Our firm, for the past three years, has been making studies of the relative values of electrical construction of all kinds from 1911 to date. The indexes prepared in our "Public Utility Construction Cost Index" show that the prices in 1934 for the mechanical equipment were slightly higher than they were in the years from 1924 to 1926.

In Mr. Lilienthal's recent testimony before the Committee on Interstate and Foreign Commerce of the House of Representatives, on April 4, 1935, he testified on page 1986: "The dam was begun under National Defense Act as a war-time measure. It was not constructed under anything like normal conditions any more than any other war-time projects were." I happen to have been connected with quite a bit of war-time construction, first, as assistant to the construction officer of the construction division in building the sixteen original cantonments. Later, I was sent to Camp Meade as utility officer and constructing quartermaster and carried out, under my own supervision, over $2,000,000 of construction work. The Wilson Dam was begun in 1918 and at the end of that year $3,242,841 were reported as expended with another $1,238,000 expended during 1919, a year after the war was concluded. Approximately $42,500,000 were spent from 1920 through 1928, the major part of the

TABLE II—*(Concluded)*

STATEMENT OF EXPENSE AND INCOME—WILSON DAM POWER PROPERTIES

amounts to a total of 125,000 kw. as follows:							
10	Loads of		300	Kw.	Demand		
20	"	"	500	"	"		
10	"	"	1,000	"	"		
9	"	"	3,000	"	"		
4	"	"	5,000	"	"		
3	"	"	10,000	"	"		
1	"	"	25,000	"	"		

The kwhr billed monthly and annually together with the revenue monthly and annually, using Tennessee Valley Authority wholesale schedules and a customer load factor of forty per cent are as follows:

	Monthly	*Annually*	
Average kwhr	30,500,000	438,000,000	
Revenue from firm power sales	$208,284.00	$2,499,408.00	$2,499,408.00
The unassigned excess of Revenue over the Cost of Power is			$456,353.00

construction work being completed in 1927. Yet this work, carried out and finished almost ten years after the war, is compared to the hurly-burly rush construction which went on during the war. The only excuse for Mr. Lilienthal's making such a comparison is that he was too young at the time of the war and had absolutely no experience with war construction, so does not know what he is talking about when he compares the construction of the Wilson Dam with war-time construction work.

With regard to excavation and concrete costs, the TVA made an estimate of present-day costs which they claim was based on the costs of similar work being done at Norris and Joe Wheeler Dams. The earth excavation at Wilson Dam actually cost $1.27 per cubic yard. The TVA figured that they could reproduce this work at a cost of 40c. The rock excavation at Wilson Dam actually cost $8.66 a cubic yard. The TVA estimated that this work could now be done at $2.50 a yard. Their witnesses claimed that these costs for earth and rock excavation, which were less than one-third of the actual cost of Wilson Dam, were what was actually being experienced by the TVA at Norris and Wheeler Dams.

The conditions at these three dams are in no way comparable, and anyone familiar with construction work required in building dams would readily appreciate why the Wilson Dam excavation would cost more than at either of these other two locations. At the Norris Dam the Clinch River is only a few hundred feet wide and most of the excavation was side-hill excavation in the dry. At Wilson Dam almost the entire dam of over 5000 ft. in length was built in cofferdams in the bed of the Tennessee River. While it is true that the Joe Wheeler Dam was also built in the bed of the river, yet at this dam the construction is entirely in slack water provided by the pool made by Wilson Dam. At Wilson Dam the water was shoal and flowed past the construction work at comparatively high velocity and at times of flood at a very high velocity. The construction methods which are being used at Joe Wheeler Dam could not possibly have been used at Wilson Dam, yet the cost of doing this excavation at Wilson Dam was reduced by the TVA engineers to one-third of what it actually did cost.

In a similar manner, the estimated reproduction cost of concrete at Wilson Dam was also greatly reduced. To cite only one example where concrete in the power house at Wilson Dam cost $42 a yard, the TVA engineers have estimated that this same concrete could be reproduced at $14 per yard. When asked if any power-house concrete had been placed at Joe Wheeler and Norris Dams, the TVA witness stated that the power-house construction at these dams was well under way. Several weeks later I visited both of these dams and the only power-house concrete that had been placed at Joe Wheeler Dam was a flooring placed on rock, while at Norris Dam the only power-house construction was a very heavy wall about three feet thick at the top and over twenty feet thick at the bottom. There was no work at either of these dams which was in the slightest way comparable with the power-house construction at Wilson Dam. None of the difficult form work of the conduits leading to and from the turbines had been done and there was no building work of any kind at either dam similar to the power-house building at Wilson Dam. Any engineer who is familiar with concrete construction work knows that it is impossible to compare the costs of concrete work without careful analyses of all the costs that enter into the construction of such concrete and this certainly was not done by the TVA engineers.

Concrete work may cost anywhere from $6 a cubic yard to $100 a cubic yard. The only way to make a comparison of costs of concrete work is to know not only the cost of materials, but to make an analysis of the concrete which has been or is to be constructed and find out what are the costs of mixing, placing, form work and finishing. The form work is the most variable cost, although the placing of concrete in thin sections is much more expensive than placing it en masse. The comparative prices used by the TVA are either the result of ignorance or unfairness in making such comparisons.

After greatly reducing the present-day reproduction costs of the dam and power house, the TVA engineers then allocated one-half of the spillway and lands to navigation and the total cost of the lock structure. All the costs of roadways and money spent on the grounds around the plant were charged to national defense, including the bridge over the dam. This bridge, with its lighting arrangements, cost $2,170,000 and is used to operate the gates both at the power-house section and along the spillway section, and a Gantry crane for this purpose travels along this bridge; yet every dollar of the cost of this work was allocated to national defense. This bridge would undoubtedly have been built by a private company for power purposes regardless of any requirements for national defense.

Then, after greatly reducing the cost of the dam by these methods, the life of the dam and lands was assumed to be fifty years and, with seven years of this life having been spent, the present-day value was reduced by 14 per cent. I have two volumes of studies on the depreciation of hydroelectric plants, one of 90 pages and the other of 65 pages, where studies have been made of most of the important hydroelectric installations throughout the country, and, after this careful and thorough study, the land and the mass concrete in the dam, with the project excavation and fill, are looked upon as non-depreciable, and the shortest life of any of the elements, excluding the machinery, was estimated at forty years, while many of the elements had a life of one hundred years to an indefinite period. A full discussion of the proper depreciation to be charged

against a hydroelectric plant would require more time than I have to give to this whole paper.

While the machinery was allowed to go in at its original cost, its life was assumed to be 25 years and seven years of this life having been expended, the total mechanical equipment was depreciated by 28 per cent. A careful study of the older hydroelectric plants built throughout the country, with proper allowance being made for the tremendous improvements which have been made in the construction of both hydro turbines and generators, would indicate that the life of the turbines and their accessory parts, installed during the past 10 years, would have a composite life of at least 50 years, just twice that estimated by the engineers of the TVA without making any studies to justify their 25-year life.

The first large water turbines and generators were put in at the beginning of the century. In 1900 the overall efficiency of a hydro generating unit was about 70 per cent. By 1910 this efficiency had increased to 82 per cent. By 1920 to 87 per cent and by 1930 to 92 per cent. Therefore, the question of obsolescence, due to increased efficiency of more modern machinery, enters very little into the hydro turbines and generators which have been installed in the past 10 years. No one expects to secure 100 per cent efficiency, so, while in 1900 there was a margin of 30 per cent open for improvement, this margin has been reduced in the more modern turbines to 8 per cent and no one expects to see this increased by more than a few per cent.

(b) *Nitrate Plant No. 2—Steam Plant:*

The steam plant at Nitrate Plant No. 2, for the generation of electric power, was constructed during the war at a cost of $12,326,392. It is a 60,000-kw. plant, comprised of three separate machines of equal capacity, one of them a high-pressure machine and two of them low-pressure turbines. In the Tennessee case, the TVA engineers valued this plant at $4,800,000. In the Alabama case, they valued it at $1,920,000. They did not attempt to obtain a reproduction cost new of this plant, but substituted a modern steam turbine plant which they claimed could be built for $80 a kilowatt of installed capacity. At the time that this testimony was given I had not visited this plant, but a later inspection showed that this plant was constructed in a building large enough to house the equipment for twice this capacity and the condensing water intake and tunnels were made big enough for this double capacity. The turbine room is spacious enough to house at least two more modern machines of at least 60,000-kw. capacity, and the boiler-room housing was also capable of very large expansion. While it might have been possible, in the low prices of 1932 and 1933, to have built a modern steam turbine plant for $80 a kilowatt, where no provisions were made for future expansion, yet I am positive that it would not have been possible to have reproduced the existing plant at anywhere near the price of $4,800,000.

In all my experience on the Maryland Public Service Commission and in the valuation work which I have done for public service commissions, municipalities, electric, gas, water and street railway and industrial plants, having an aggregate value of well over a billion dollars, I have never attempted, in arriving at a reproduction cost, to value a substitute plant. All the court decisions of which I know prohibit the valuing of a substitute plant or equipment for that actually used and useful in the public service. Should a company attempt to value a substitute plant at a higher price than the one that was being valued, we all know what would happen to such a valuation, yet the TVA engineers did not hesitate to substitute a modern up-to-date plant of equal capacity, as far as the machinery was concerned, for an entirely different plant and one that would have cost to reproduce a great deal more than such substitute plant. Not only did the TVA engineers value this steam plant on the basis of a substitute plant, but they then depreciated this small value by 60 per cent, assuming the life of this plant to be 25 years and that 15 years of this life had been expended, regardless of its present condition or the conditions under which it will be operated.

The use of the straight-line theory in arriving at accrued depreciation has been condemned in a number of court decisions, among them the Indianapolis water case before the Supreme Court, and I know of no decision by any Federal court where the straight-line theory of depreciation has been upheld, although there are numerous decisions stating that depreciation must be arrived at by those who are capable of determining its present condition and usefulness.

It is true that this plant would cost more to operate than a modern, up-to-date plant of similar capacity. I have made an estimate of the additional cost of such operation which would be $40,000 per year. This additional cost of $40,000 per year, capitalized at 3½ per cent, would only amount to $1,140,000 and this is the amount of depreciation which I estimate should be placed upon this plant. As a standby plant for the hydro units, this plant will probably be kept in service for at least 25 years longer before it would pay to replace it with a modern plant. Anyone at all familiar with the operation of standby plants to supplement hydro service knows that it is not economical to scrap older steam plants and build new ones to replace them, although the cost of generating the current in such a standby plant might be much greater than would be the cost of generating current in the new plant.

(c) *Other Buildings, Fixtures and Grounds:*

In the Tennessee case, the TVA engineers estimated the value of other buildings, fixtures and grounds used and useful in connection with the hydro plant at Wilson Dam at $500,000. In the Alabama case, no value at all was given to this item, although they did put in an item for the expense of rental of non-operating buildings, fixtures and grounds of $10,000, which would be 2 per cent for maintenance, operation, depreciation and interest on the value of these elements as valued by the TVA in the Tennessee case.

There is no reason that I know of why the reproduction costs of the buildings and grounds that are required in connection with the hydro operations should not be determined and put in the rate base. Certainly, no regulatory body would permit a company to include any figure for this item unless the company owning this property could give an estimate of its reproduction cost and value and the cost of maintaining and operating these properties. Yet the TVA, after weeks of careful study, did not see fit to even attempt to determine the value of such properties. Every private utility company which has built a hydroelectric plant knows that a very considerable amount of money must be spent for the other buildings, fixtures and grounds that are required in addition to the actual hydroelectric plant itself. This is not only true of hydroelectric plants, but is also true of large steam plants.

2. Interest Charges

(a) *Interest:*

The TVA announced that they would pay interest in order to make a fair

comparison with privately operated utilities for yardstick purposes, but the interest rate which they charged against the greatly depreciated rate base is 3½ per cent. The 1932 United States Department of Commerce census of the Central Electric Lighting and Power Stations gives a rate of interest of 5.3 per cent for privately operated utilities in the United States in connection with their funded debt. The ratio of funded debt to total capitalization of the electric companies is about 50 per cent, so that private companies have had to raise one-half of their capitalization by the sale of preferred and common stock. I do not need to tell you gentlemen that it costs more to finance stock of any kind than it does funded debt and that an average rate of interest of 6 per cent would probably be lower than the actual cost of money which has been raised by private electric utilities in developing their properties. I also feel sure that at the present time utilities would have to pay more than 6 per cent in order to raise money for expanding their plants, yet the TVA authorities maintain that a 3½ per cent rate of interest is perfectly fair as a yardstick for measuring what the private utilities should do.

(b) *Reserve for Taxes (Retirement of Capital):*

Now let us see what TVA rate experts do with regard to their taxes which they charge so as to make a fair yardstick for private utilities. Under the TVA act the Government must pay the states 5 per cent of the gross revenues from the sale of electric power by TVA. In the first place, in figuring their gross income, the TVA figure an income of $2,500,000 from the sale of firm power. They also figure that current used by their fertilizer plants would be worth $320,000 a year and in the Alabama case, they discovered another customer, undisclosed, from whom they would receive $120,000 a year for the sale of secondary power, making a total value of secondary power generated at Muscle Shoals of $440,000 a year.

In order to be fair, the TVA states that the taxes during 1932 for privately operated utilities averaged nationally 12½ per cent of the gross receipts of the private utility companies. Therefore, they proposed to make a charge of 12½ per cent of their gross receipts for the sale of firm power, but no charge at all for their receipts from the sale of secondary power. Of this 12½ per cent which they propose to charge into the rates, 5 per cent of it will be actually paid out, but the other 7½ per cent, which is 60 per cent of their taxes, will supposedly be used to retire their capital. If the private utilities could take 60 per cent of the amount which they pay in taxes and use it to retire their capital, they too would soon be able to reduce their rates. Yet there is nothing in the TVA act requiring the setting apart of the 7½ per cent for retirement of capital and there is little reason to believe that it will be so used. If it is collected in the rates, it is my belief that it will be used to take care of deficits rather than retire capital.

In Mr. Lilienthal's testimony before the Committee on Interstate and Foreign Commerce, on page 1988, he makes the statement that the wholesale rates of the TVA will permit of paying back the $60,000,000 spent for Wilson Dam and the steam plants as follows:

> "The Tennessee Valley Authority is in a position on the basis of its present wholesale rates to repay in to the Treasury of the United States not only the present value of Wilson Dam for power purposes, which we believe to be in the neighborhood of $20,000,000, but every penny that the Federal Government has invested in that property for power purposes at all, which is about $30,000,000. And further, in order that all of the argument may be voided and we can concentrate on really fundamental issues, the Authority is in a position on the basis of its present rates, to repay not only the actual investment for power which was excessive, because of the circumstances of construction, but to pay back to the people of the United States every penny that was invested in Wilson Dam for any and all purposes, at total of about $60,000,000. That figure includes the $12,000,000 steam plant. The excess of revenue over expenses, including interest and taxes, will permit this to be done out of current operations."

The only place on this continent where an electric system similar to that proposed by the TVA has been constructed and operated is that of the Hydroelectric Power Commission of Ontario in Canada. What were their expectations regarding the retirement of capital and what progress have they made toward this end?

In 1924, Mr. Judson King, in a statement before the Senate Committee on the completion of Muscle Shoals, in speaking of the Hydroelectric Power Commission of Ontario, Canada, stated "the rates are fixed so that the bonds will be paid in 30 years." In 1928, in a pamphlet prepared by the Hydroelectric Power Commission of Ontario called "Its Origin, Administration and Achievements," on page 9, the following statement is made, "Ontario consumers can look forward to the time when the present plant will be clear of encumbrances and they will be relieved of the necessity of paying interest and sinking fund thereon, which together amount to 60 per cent of the total expenses of generation and transmission." The 1933 report of the Commission shows capital investment of $285,003,969 and outstanding debt of $264,246,753, or 93 per cent of the capital investment. For the year 1933, the report showed a deficit of $4,236,607. In other words, 7 per cent of the capital investment had been retired in approximately 30 years of operation and during 1933 over $4,000,000 of this retirement was wiped out by a deficit. Can the TVA, with its much lower rates than they have in Canada, succeed in wiping out a $60,000,000 debt for the construction of Wilson Dam and the steam plant as Mr. Lilienthal claimed before the House Committee?

Another feature of this tax situation is that this 12½ per cent is charged only on the wholesale price of electricity, while, with the private companies, their 12½ per cent during 1932, which was nearer 15 per cent in 1934, is charged not only for wholesale current but also for retail current. The wholesale price of current is given by the TVA as about 5.7 mills, while the average price of current, both wholesale and retail, by the private utilities, is from 3 to 5 times this amount.

(c) *Depreciation:*

The depreciation charged by the TVA in the Tennessee case was $200,000 a year on a valuation of $30,000,000, or at the rate of about two-thirds of 1 per cent. In the Alabama case, they raised this depreciation to $563,997 which was fairly close to the $607,000 which I figured should be the proper charge.

The TVA, however, in figuring their depreciation have used the sinking fund basis for arriving at this depreciation charge. Had this been used throughout the life of the plant then no accrued depreciation at all should have been charged against the existing plant. They use the straight-line method of depreciation in arriving at present-day value and then in order to cut down their annual charges they go to the sinking fund method, and where the sinking fund method is employed no state regulatory body charges any accrued depreciation against the original cost of the plant.

3. Other Charges

(a) *Operation and Maintenance of a Hydro Plant:*

In regard to the operating and maintenance costs of a hydro plant the TVA made the following announcement: "On these items we have experienced data on the Muscle Shoals plant. Economies and improvements will doubtless be made to cut down this figure, but no allowance in such economies has been made in the computations." In another announcement they say that the "average expenditure for the last seven or eight years to January, 1933, was $245,000 annually." After making these announcements as the basis for establishing their rates, in both the Tennessee and the Alabama cases, they then proceed to reduce these costs of maintenance and operation to $150,000 per year and, in the Tennessee case, they give as a reason for this reduction, that the higher figure included substantial amounts charged to capital accounts, such as the complete overhaul of governors and supplying new parts for them, the recoating of the gates at the dam with hermastic enamel, and the expense of the operation of the village. They call these items capital charges, but I know of no private electric company which would charge such items to capital account. In the Alabama case, they reduce the actual charges experienced from the $245,000 announced to $211,415. It was shown that, according to their own figures, this was an error and that the annual cost should have been $232,000.

(b) *Overhead Including New Business:*

In the Tennessee case, these two items were combined and were given as $100,000. When it is considered that this item must cover all expenses outside of maintenance and operation of the hydro plant, steam plant and transmission lines, and that the TVA expects to sell $2,500,000 worth of primary power and $440,000 worth of secondary power, giving a total of practically $3,000,000, all this overhead and new business expense must be done for about 3 1/3 per cent of the gross income of the TVA.

In the Alabama case, they did change these costs by allowing $60,000 for new business and development expense and $45,000 for general administrative expense. This item of $100,000 in the Tennessee case and $105,000 in the Alabama case covers a multiplicity of items, such as general administrative officers, legal expenses, accounting expenses, including billing and reading of meters, auditing of books; engineering costs, publicity and advertising, purchasing, personnel work, including employing and rating of employees, pensions, mutual insurance and other such matters carried out in a personnel department of private utilities; injuries and damages, general office expense, including stationery, telephone, telegraph, rent, heat, maintenance and repair of buildings if owned by the TVA; traveling expenses by railroad, automobile and aeroplane, right-of-way expenses, customer contacts, customer complaints, new contacts and many other miscellaneous items.

Such costs by private utilities cover commercial, new business, general administrative and other general expenses. They usually amount to from 15 to 20 per cent of the gross income of the private companies. It is possible that TVA might do this work more economically than the private companies, but I do not believe for one minute that they can carry out this work for one-fifth or less than this necessary work costs the private companies. Of course, if the new business of the TVA is carried out by the Electric Home and Farm Authority, and the charges for many of these general items are paid under the guise of other costs, than the costs of producing and selling electricity, then these costs may be reduced for the TVA much lower than they would be for a private company which has no convenient place to bury such charges.

(c) *Steam Plant, Added Expense Running:*

This item, in the Tennessee case, was charged with $100,000 expense. Although the weeks of careful study had produced this item of $100,000, it was raised in the Alabama case after being criticized at Nashville, to $150,000, which was quite close to my own estimate as to cost of maintaining and operating, when necessary, the steam plant.

After arriving at a total generating cost, in the Tennessee case, of $1,983,000, they then proceeded to use 320 million kwhr of current at the Nitrate Plant, and the cost of generation was credited with one mill per kwhr, reducing the cost of generation in round figures to $1,700,000. In the Alabama case, they not only deducted the $320,000 for power used at the Nitrate Plant, but they added $120,000 for power to be sold to some undisclosed customer, making a total deduction in the cost of generation of $440,000, reducing the net cost of generating power to $1,519,705, or for less than 3.5 mills per kwhr for primary power alone, but for slightly over 1.8 mills per kwhr if the secondary power is included.

4. Transmission

In the Tennessee case, the TVA used a price of $50 per kilowatt of transmission net work cost, and stated that they considered two loops, one of 200 miles in length and one of 100 miles in total length, together with sectionalizing switches. There is no supporting statement as to whether the loops are typical of conditions to be found in the problem of transmission and distribution in the South. Transforming costs are largely a function of capacity; transmission costs vary with the length of the circuits.

In the Alabama case, the TVA valued the transmission lines that it was proposed to buy from the Alabama Power Company and the Mississippi Power Company, at the low prices which they were offering these companies for these lines, at approximately 50 per cent of their book values. They also estimated a number of miles of proposed new construction with new substations, giving a total cost of existing and proposed transmission lines of five million dollars.

Classes of property typical of transmission net works for utility services include high-voltage lines where power is moved in large quantities at voltages of 110,000 and above; primary substations, together with synchronous condensers where energy is transformed from 110,000 to voltages suitable for high-voltage distribution, of which in the South, 22,000 and 44,000 volts are typical; high-voltage distribution systems, consisting of pole lines radiating from primary substations and, finally, customers' substations tapping these distribution circuits where power is transformed to voltages suitable for cotton mills, coal mines and various other industries, and for distribution systems within urban and rural communities.

For the cost of maintenance and operation of this transmission system in the Alabama case, the TVA charged $145,000 for the distribution of 438,000,000 kwhr, which is equal to about 3 1/3 tenths of a mill per kilowatt-hour. Where figures were available from three different companies, I checked the maintenance and operating costs of these companies for the transmission systems and found these figures ran from .8 to 1.2 mills per kilowatt-hour. Also, taking the Alabama power system as typical of Southern transmission and from figures secured from the public service

commission as to these costs, using the 3½ per cent interest rate, the fixed charges and operating and maintenance costs of the Alabama Power Company for its transmission systems would be $866,000 a year compared to $523,000 given by the TVA engineers. If the interest rates were raised to 6 per cent then the transmission costs would be $1,110,000 a year, yet the low TVA cost is the yardstick for private utility costs.

TVA engineers have figured their facilities fully loaded. I do not believe it is practical for them to use their facilities to over 85 per cent of their capacity. Without going into the full details of my own figures as opposed to the TVA figures, but using a value of the hydro plant and the steam plant at Nitrate Plant No. 2 of $35,595,000 as compared with the TVA's estimate of $21,448,000, and estimating maintenance, operation and depreciation at what I believe will be more nearly the results from actual experience, but figuring only on a low interest or rate of return of 3½ per cent, and a reduction in sales of prime power from 438,000,000 kwhr of 367,000,000 kwhr, I obtain a cost per kilowatt-year of $44.20 as compared with the TVA's cost figures of $19.50. If the interest rate is raised to 6 per cent, which private utilities would have to pay, the total annual cost per kilowatt-year of prime sales would be $58.

Comparison with Canadian Costs

You have all heard, no doubt, a great deal about the cheap power available in Canada by the Ontario Electric Power Commission. It will be interesting to see how the wholesale prices of power by this Commission compare with the proposed wholesale prices of power given out by the TVA. The Tupelo wholesale rate, with a demand of 1350 kw. per month and a monthly consumption of 500,000 kwhr, would be equivalent to a charge of $18 per horsepower a year. The Ontario commission does not make a uniform charge to all cities, but the charges to the different cities are based upon all the costs, including the transmission costs to the particular city. The Ontario Power Commission, in March, 1906, published its estimate of the cost of producing power at the switchboard of a power plant at Niagara Falls, of $5.89 per horsepower year, on the basis of a 60,000-hp. plant, and of $4.95 per horsepower year, on the basis of a 100,000-hp. plant. (Murray and Flood Report, page 53.) The Commission in the same year also prepared an estimate of the cost of power to be delivered from its main transmission lines at the substations of specified local distributing municipalities. (Murray and Flood Report, page 45.) Table V shows for a number of municipalities the relationship of these 1906 estimates to the cost of power now being charged to them.

In 1917 work was begun on the great Queenston plant of the Ontario Hydro Commission. This plant ultimately had a capacity of 500,000 hp. The first unit began operation on Jan. 26, 1922, and the entire works were completed in 1930. While this plant was being constructed the chairman of the Ontario Hydro Commission, in his "Refutation of Unjust Statements," published in 1922, stated, "It is the judgment of the Commission's engineers that the ultimate cost (at the switchboard of Niagara power) will be substantially lower than the figure of $12.60 which Mr. Murray supplies." He also remarked, in referring to the completion of the Queenston plant, "As this additional power is marketed there will result in the municipalities a continually decreasing average cost of power." ("Refutation of Unjust Statements," pages 41, 42. This was an answer by Sir Adam Beck to the Murray and Flood Report of 1922, which contained an estimate of cost for the Queenston plant, at the switchboard, of $12.60 per horsepower-year for a plant of 650,000 hp. See Murray and Flood Report, page 140.)

The Ontario Hydro Commission does not show the switchboard cost of electricity at its Queenston or other Niagara Falls plants, but the price charged the municipality of Niagara Falls, Ontario, for delivered power gives a sufficient measure of this cost to indicate the marked difference between the 1906 estimate of $4.95 per horsepower-year and the later actual costs. It indicates that the estimate made as late as 1923 of less than $12.60 per horsepower-year was far from realized.

It will be seen from Table VI how the wholesale cost of electricity in Ontario has been steadily mounting. In spite of these increases in rates, the 1933 report of the Ontario Hydro Commission shows a deficit after charges of $4,236,607 for the Niagara system for 1933. It will be noted from the preceding figures that the TVA wholesale prices are far below those now being charged by the Ontario Hydro Commission, notwithstanding the fact that the water powers of Canada so far developed are inherently cheaper than those of the Tennessee River basin because of the greater regularity of flow of the Canadian Rivers, and other factors.

Niagara Falls, where the principal Ontario development is located, has long been recognized as one of the most favorable water power sites in the world, yet the TVA is proposing to sell its power at Tupelo at 55 per cent of the price the Ontario Hydro Commission has now found it necessary to charge the city of Guelph, a city with 6000

Table V

Cost of Power per Horse-power Year

City	Population (1933)	Distance From Niagara (Miles)	Commission's Estimate 1906	Actual Cost 1929	Actual Cost 1933	1933 Cost as Per Cent of the Estimate
Large Cities						
Hamilton	154,700	53	$9.50	$22.50	$29.34	308%
Toronto	626,700	78	12.50	24.17	30.09	240
Kitchener	31,500	95	13.20	25.39	31.67	240
London	73,200	123	15.00	24.05	30.51	203
Smaller Cities						
Guelph	20,750	75	$13.50	$24.90	$32.46	240%
Galt	14,000	92	16.00	25.77	32.30	202
Stratford	19,000	119	16.20	27.44	33.88	208
St Mary's	4,000	133	20.00	32.48	40.00	200

Table VI

Cost of Power to Municipality at Niagara Falls; Dollars per Horsepower

1918	$9.90	1923	$17.89	1928	$18.94
1919	10.96	1924	19.13	1929	19.40
1920	12.36	1925	18.78	1930	19.50
1921	14.24	1926	19.05	1931	19.96
1922	19.46	1927	19.30	1932	21.92
				1933	25.28

customers, located as far from Niagara Falls as Tupelo is from Muscle Shoals.

With regard to the retail rates in the Canadian cities, it is interesting to note that the issue of the Toronto *Daily Star* for March 17 states that the Toronto electrical department had a deficit during 1933 of over $400,000. Yet, in the face of this Canadian experience, where power is sold at cost, the optimistic TVA engineers have made rates in the Tennessee Valley area which are almost one-half of the rates which the Ontario Hydro Electric Power Commission has found it necessary to charge to Canadian municipalities.

The present condition of the TVA, with its low-cost estimates for current, have been aptly described by one writer as the "honeymoon day of the TVA." If all the costs for generating and distributing electricity are actually paid by the TVA, I believe there will be a rather rude awakening to the municipalities in this area when the "honeymoon days" are over and the hard realities of experience are realized. Of course, if a large part of the expense of developing the power in the TVA is charged to navigation, flood prevention, national defense, soil erosion, the Electric Home and Farm Authority, and the other agencies which are doing work that private utilities would have to pay for, then the cost of the current can be kept at a low figure; but to say that this is a yardstick for what the private utilities should sell their power for is absolutely unfair and misleading.

Shortage of Power

You will also probably be surprised to learn that there is a grave danger of a shortage of power within the next few years in the United States and that the TVA power developments and the other power developments now being constructed by the United States Government are required to meet this danger of a shortage of power. I made a careful study of the generating capacities in all of the large companies, 33 in number, which are within a 200-mile radius of the proposed TVA generating plants. I found that these companies had an installed capacity of generating equipment of 5,341,389 kw. After making as careful an estimate as I could in the short time available, of the firm capacity of the different companies, I estimated that there were 4,000,000 kw. of reliable capacity available within this area. This would give an installed capacity 33 1/3 per cent in excess of the firm capacity.

In making these figures, I did not consider the smaller plants and installations which were located in this territory, but only considered the larger plants and systems. The total generation by these large companies was 11,988,000,000 kwhr and, based on a 55 per cent load factor, this generation would have required a capacity of generating equipment of 2,490,000 kw. My estimate therefore of the excess firm capacity in this area was 1,510,000 kw. These figures were based on the 1933 consumption.

In arriving at these figures, I did not take into account the large hydro developments by the Aluminum Company which are interconnected with the large system companies' transmission lines and have an installed capacity of 325,000 kw. The small systems and isolated plant capacities I found had an installed capacity of 240,000 kw. and, again, these were not considered in my estimates of the firm capacity available in this territory. Yet, according to the TVA witnesses, the Tennessee Valley will have a shortage of power by the year 1937. The figures upon which I based my estimates were taken from the McGraw-Hill Directory of Central Station Plants for installed capacity and the generation by the different companies was taken from the Supplement of the *Electrical World*.

I also made an extravagant forecast of what the consumption might be in this area by 1940. I took from the United States Census the number of farms in the different States in this area and included all the farmers having an income of $1,000 or more a year as possible customers. From the bulletins of the Electric Institute I found that in this area there are approximately 100,000 electrified farms. I estimated that this number of 100,000 would be increased to 869,237. The total number of farms served in the whole of the United States on June 30, 1934, was 724,015. I therefore figured that this area would have more farms connected in 1940 than the whole of the United States did by the middle of 1934.

That this is an extravagant figure I believe will be shown from the Canadian experience, where, in the Province of Ontario, the Government pays one-half the costs of the primary and secondary lines and transformers for rural lines serving farmers, and where this has been done for ten years. In 1933, at the end of ten years of Government assistance, out of a total of 193,000 farms in Ontario, 28,080 have been electrified. In other words, in Ontario, with the Government paying half the cost of bringing the service to the farmers, 14.6 per cent of the farmers had been connected to the Government-owned Ontario lines in 1933.

Statistics from the Census Bureau show that the population of the Tennessee Valley area has one of the lowest per capita incomes in the United States. A study of the Census shows that of the 1,317,812 farm dwellings in the States of Kentucky, Tennessee, Alabama, Mississippi and Georgia, 1,040,000 of these dwellings have a value between $500 and $1,000, and 676,028 of these dwellings have a value of less than $500. The Census reports show that in the East-South-Central States, including Kentucky, Tennessee, Alabama and Mississippi, the number of white farmers in 1930 was 741,255, while there were 320,959 colored farmers. The Census also shows that the percentage of farms in this same group of States operated by tenants was 55.9 per cent. There are only two other states in the Union, namely, Arkansas and New Mexico, where the median value of farm dwellings is under $500. Yet including this territory, I figured that by 1940 there would be more farms connected than there were the middle of last year in the whole of the United States.

Then I assumed that these farmers would consume on an average of 1450 kwhr per year. The average consumption in 1934 for farmers throughout the United States was 778 kwhr per customer and this included the farms where private irrigation ran the total consumption by farmers up to as high as 13,947 kwhr per month in the State of California, and 10,690 kwhr per month in the state of Arizona. I do not believe that by 1940 it would be possible to connect either this number of farmers or to raise the farm consumption to the amounts which I have estimated.

The non-farm homes using electricity in the small towns, classed by the Census as non-farms, I have estimated to be increased by 598,900, while at the present time the wired homes in the area are 658,446. In other words, I have almost doubled the number of non-farm homes which are located in towns under 2500 population, most of which are being served at the present time. These non-farm homes I have estimated will consume 1200 kwhr per year. In the urban communities, I have estimated that the domestic con-

sumers in cities where natural gas is served will be increased so that out of a total number of homes of 2,372,570, 2,038,000 will be electrified. Of these electrified homes, 920,000 will be in natural gas cities and have a consumption of 1000 kwhr per month. There will be 1,118,000 homes in cities without natural gas and in these I have assumed that the consumption will be 1200 kwhr per month.

The basis for my assumption that the cities having natural gas will not consume as much electricity as those which do not have natural gas is based upon the experience in Canada, where three cities not having natural gas in 1933 averaged 117, 119 and 162 kwhr consumption per month. In three other cities, natural gas was available and the average use of electricity was 71, 75 and 85 kwhr per month. In this country, the same difference is evident. In Los Angeles, with low municipal rates, the use is about 600 kwhr per year, while in the Northwest, in the neighborhood of Spokane and Tacoma, the electric consumption is more than twice what it is in Los Angeles, these cities in the Northwest having no natural gas available.

I have figured that the commercial consumers in the area will be 25 per cent of the domestic consumers and that these commercial consumers will use 3000 kwhr per month. For the industrial consumers, I found that the industrial sales in 1929 were 7,291,000,000. In 1933, the industrial sales were reduced to 6,539,000,000. I figured that by 1940, the industrial sales would have recovered so that there would be 8,000,000,000 kwhr of current sold to industrial consumers. I also increased the street lighting and other municipal services by 37 per cent and the electric railway sales by 15 per cent, and then assumed that the company use and loss would be 2,600,000,000 kwhr per month.

All of this would call for a total supply of current by 1940 of 17,491,000,000 kwhr. Based on a 57½ per cent load factor, this would require a generating capacity of 3,490,000,000 kw. As previously estimated, there is already installed a firm capacity in this area of 4,000,000 kw so that by 1940, with the extravagant estimates which I made, I figured that there would still have been an excess of 510,000 kw of generating capacity within the area within 200 miles of the TVA generating stations. Instead of there being a shortage of power by 1937, I do not believe that there will be a shortage of power in this area until 1942 or later.

Another example of how easy it is for optimistic estimates to be made is shown by the estimates that were made in 1923 in connection with the construction of Boulder Dam. Messrs. Ready and Butler made an estimate at that time which showed that the estimated load in Southern California to be served by Boulder Dam would have reached, in 1934, 8,782,000,000 kwhr per year. As a matter of fact, at no time after 1923 did the consumption in this area ever reach the figures estimated before the project was built, and in 1933 the actual load in this area was approximately 4,780,000,000, a little over half of the load estimated in 1923.

There is sufficient generating capacity in this area at the present time to serve all of its needs and the current from Boulder Dam will be sufficient to serve almost the total requirements of this territory, so that if all the Boulder Dam current is used when it is placed in operation, practically all of the existing generating plants will be closed down.

One of the TVA experts presented an estimate showing that the consumption in the TVA area was approximately 7,500,000,000 kwhr in 1934, and he estimated by 1937 this consumption would have been increased to 10,000,000,000 kwhr, an increase of 33 1/3 per cent in three years. The increased consumption in 1934 in the TVA area over 1933, was less than six per cent. In 1934, out of a total estimated production of electricity in the United States of approximately 90,000,000,000 kwhr, about 12,000,000,000 kwhr were used in domestic service. The greatest possible increase in the use of electricity is expected to be in connection with the domestic consumer. With the domestic consumption being less than 15 per cent of the total generation, an increase of 50 per cent in the domestic consumption would mean only an increase of less than 7½ per cent in the required total output of electricity.

Farm Uses of Electricity in the TVA Area

In Mr. Lilienthal's testimony before the Committee on Interstate and Foreign Commerce of the House of Representatives, he stated that "98 per cent of the farmers in the Tennessee Valley have no electric service and that would absorb more than this surplus that we were talking about if they could be provided with service at low rates." He also stated that while there are private company lines in this area, the farmers cannot use the service because the rates are prohibitive. In other words, Mr. Lilienthal intimates that the TVA will have a rather easy time to serve all of the farmers in the TVA area with their cheap current. Also remember that Mr. Lilienthal said that the TVA would be a self-supporting and bankable proposition.

I have already brought out the fact that over 50 per cent of the dwellings in this area are listed in the United States Census as having a value of less than $500. To assume that these farms will use electric light and electricity for cooking, refrigeration, hot water heating and house heating, to say nothing of for such other purposes as radio, electric irons and other innumerable purposes and appliances, the use of which costs money, is an assumption that I do not believe can possibly be realized.

The cost of serving these thinly populated rural districts will probably be more than twice that of serving customers in urban areas. About a year ago, I made a rather careful analysis of the cost of service in a city of 30,000 inhabitants in Pennsylvania compared with serving the country districts surrounding this town, and I found that it cost twice as much to serve the country customer as it did the urban customer. Yet the TVA proposes to serve these farmers at practically the same low rates at which it serves its urban customers. To do this and keep the proposition a self-supporting and bankable one will be a most remarkable feat. In my opinion, a great deal of the so-called self-support will come from the taxpayers either in the cities of the TVA area or from all other sections of the United States.

Under the TVA rates in Alcorn County, a customer pays $3.50 for a hundred kwhr per month, and of this $3.50, one dollar of it is for payment of the cost of facilities for serving the farmer. As soon as these are paid for, the farmer will then get his service for $2.50. In Canada, I find that the Class 3 farmer, who is the smaller farmer, pays $5.43 for the same quantity of electricity. In other words, the Canadian consumer at present pays more than 50 per cent more for his current that the Alcorn County consumer, and when the facilities are paid for

in Alcorn County, the farmer there will get his current for less than half of the cost of current for the Canadian farmer, who starts out with half of the cost of facilities being paid for by the Government of Ontario.

Going back to the use of the waters of our large drainage basins so as to secure the greatest benefit to all the people by the full utilization of the waters of a river for every purpose, I repeat that I believe this should be done and I believe that this is thoroughly feasible without the necessity of the Government generating tremendous surpluses of electric power and going into competition with the already existing private utilities, thereby bringing about a great destruction of capital already invested by our citizens in these private companies.

Before the present Administration came into power, much progress had been made looking towards such a development of our rivers. The Army Engineers for a number of years have been making studies to show how the waters flowing in the streams can best be utilized to give the maximum economic value in their development. The Federal Power Commission has been given control over hydro developments and they have the power to require that any project which is proposed on practically any stream in the United States for hydro development shall be carried out in such a manner as to use the water of the stream to produce the maximum economic development of the stream. If the Government finds that, in addition to the power uses of a stream, the building of a dam will also be of assistance to navigation, flood control, soil erosion, national defense, or any other national use, it would be just as easy to estimate what this value is and for the Government to pay for these benefits, thereby reducing the cost of the hydro electric development; and also thereby decreasing the cost of current to those consumers who will use the electricity from such a development. In this way, these consumers will get the same benefit exactly that accrues to customers where the Government itself develops a project and then reduces the charges to the electrical end of the project in the way they have done in the Tennessee Valley.

There are undoubtedly many hydro projects in the country where there will be benefits to navigation, flood control, national defense and other national purposes, and where, if the Government would be as liberal as they have been in the Tennessee Valley, these projects would be carried out by private capital. They would not be carried out by private capital, however, where there is no market for such power.

The TVA, and all the other Government power projects, are carried out on a widely different basis from that practised by private utilities in connection with a possible market for their output. The cost of power produced by hydro electric plants is very largely a fixed cost due to interest, depreciation, taxes, these costs amounting to from 80 to 90 per cent of the total cost of producing current in a hydro plant. These costs are fixed with the possible exception of some taxes and occur regardless of whether one kilowatt-hour or a billion kilowatt-hours are produced. It is therefore imperative that a market for the output of the plant be available to sell practically all of the output. If only half of the output is sold, the costs are nearly double on the kilowatt-hour basis.

As an example of how a private utility views this question of a market, I might cite a case of the Conowingo development on the Susquehanna River which was constructed by the Philadelphia Electric Company. The lands and water rights for the construction of a power plant on the Susquehanna were acquired by other interests back in the early 80's and for years the owners of this site tried to finance and develop a power plant on the Susquehanna River. These owners looked to Maryland, and particularly to Baltimore, to provide a market. Even as late as 1925, the City of Baltimore would provide a market for only one-third of the capacity which was finally installed in the Conowingo plant. It was therefore not until the Philadelphia Electric Company came into the picture and the City of Philadelphia provided a market sufficient to absorb the total output of the proposed hydro plant that this project was considered economically feasible. The plan as outlined before the Public Service Commissions of Maryland and Pennsylvania contemplated the use of every kilowatt-hour that could be generated at this plant and Philadelphia provided the only nearby market which could absorb this entire output.

The TVA is proceeding with an expenditure of 72 million dollars at Norris and Wheeler Dams with tentative plans for the expenditures of many more millions of dollars in a territory where the market is already fully supplied by private utilities which have a large amount of excess capacity in plants already constructed. No private utility would dare to undertake such a program and, in my opinion, no financier would provide the money for such an undertaking. The Government, through the TVA, having back of it the full resources and taxing power of the whole United States, can provide money for such an undertaking. Whether this development will ever prove self-sustaining, with the low TVA rates, is, in my opinion, extremely doubtful and, even if the prices are raised as they have been in Canada, there will be a period of years before a self-sustaining basis can be reached and, during this development period, the deficit will have to be made up by taxation. No private utility would dare to face the uncertainties which are ahead of the Government in making the TVA development a bankable proposition.

There are many other interesting phases of the TVA experiment which I could continue to talk about for a much longer time. There is the evidence produced by the TVA in the Federal Court to show that the TVA was conceived as a navigation, flood control, national defense, fertilizer, soil erosion project and that the production and sale of power is merely incidental. Many Government experts were brought from Washington and elsewhere to prove this, but it was quite interesting to note that none of these experts had ever been consulted until after the Court case had started.

I could also discuss the engineering testimony of Colonel Robert Randolph of Chicago, in opposition to the TVA, regarding navigation, by a series of low dams at a fraction of the cost of the high dam project, and the testimony showing the difference between generation, transmission and distribution of electricity. Then there is the decision of Judge Grubb, with which most of you are no doubt familiar. But I will close by quoting the last paragraph of the Judge's ruling on the TVA's motion to dismiss the Bill of Complaint, which outlines his views of the law and reads as follows:

"Under our dual system of Government, the United States, in the exercise of its constitutional powers, even within the confines of one of the States, has paramount power over the State. In matters of internal concern not affecting any constitutional power of the national government, the State, under

(Continued on page 232)

Report of Rate Research Committee

By Frank A. Newton

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Presented before the Third General Session of the Third Annual Convention of the Edison Electric Institute, Atlantic City, N. J., June 4th, 1935

AGITATION against the rates of electric utilities has been directed almost entirely to residential rates. The commercial and merchandising campaigns of the companies are devoted primarily to the development of this class of business. Unusual efforts are being exerted to increase domestic sales through better lighting, household appliances, refrigeration, cooking and water heating. From the rate standpoint, residence customers have been receiving the most attention, both from the utilities and from governmental regulatory bodies. In view of these facts, your committee will confine its observations and recommendations at this time chiefly to the subject of residential rates.

At the close of 1934 there were 20,693,751 homes and farms being served by the electric utilities of the United States. This is a new all-time high in number of domestic customers of electricity. During the year 1934, 480,000 domestic customers were added. Domestic sales in 1934 reached a total of 12,797,635,000 kwhr. This is also a new high. It exceeds the sales of the year 1933 by 837,379,000 kwhr, an increase of 7 per cent. At the same time, while new records were being established with respect to number of domestic customers and total sales to this class of users, a new low was established in the average price for domestic use, namely, 5.3c. per kilowatt hour.

One of the most striking facts of the depression is that the household users of electricity—the homes of the United States—have steadily increased their use of electricity. When this fact is fully realized in view of what happened with respect to declining purchases of food, clothing and other commodities, it becomes very significant. In the five depression years, 1930 to 1934, inclusive, the purchase of electricity for household use actually increased 31 per cent. The average rate for domestic consumption during the same period decreased 16 per cent. During the same five depression years the users of electricity in this country invested the tremendous sum of $2,667,606,000 in electrical appliances. In 1934 the domestic customers consumed 3,024,847,000 more kilowatt hours than in 1929 and at an increased cost to them of $59,000,000. Or, to put it in another way, the additional kilowatt hours used in 1934 by the homes of the United States over 1929 were purchased at an average of less than 2c. per kilowatt hour. Is it any wonder that they increased their use of electricity as compared with the marked decrease in their use of other commodities? The householders of the United States, in the face of steadily decreasing incomes, exercised their choice. They elected to increase their use of electricity while at the same time they were purchasing less of nearly every other service and commodity. Could there be a more significant expression of the public's measure of the value of electricity than this fact discloses? Could there be a clearer demonstration of the promotional character of the rates charged by the companies generally?

MR. NEWTON

The average annual bill paid by the householders of the United States for electricity in 1934 was $33.44. This is $2.79 per month, 64c. per week and about 9c. per day. But this is not a complete picture of the situation. These averages, as is often true of averages, are misleading and do not reflect the true situation or indicate the real problem. The Federal Power Commission points out that of the 20,000,000 domestic customers, approximately 13,350,000, or nearly 70 per cent of the total, use only lighting and small appliances. The Commission further notes that of these 13,350,000 residential customers, comprising nearly 70 per cent of the whole, 25 per cent used 15 kwhr or less per month, 50 per cent used 25 kwhr or less and 75 per cent used 40 kwhr or less per month. The Commission finds that 25 kwhr represent the prevailing monthly consumption of these 70 per cent of the household users of electricity.

Of the 20,000,000 homes using electricity it is estimated that approximately 1,500,000 are habitual minimum bill customers paying minimum charges ranging from 50c. to $1.00 per month. It is also estimated, on the basis of careful studies, that between 60 per cent and 70 per cent of the residential customers of the country are paying less than $2.00 per month, or less than 7c. per day. It seems difficult in the face of these figures to understand what all the agitation is about. What is the basis for the attack upon the cost of electricity to the householders of this country, when nearly 70 per cent are paying less than $2.00 per month, or less than 7c. per day, for a service which they would be the first to admit is one of the most valuable services they obtain—one of the most reliable, one of the most important in their daily life and one of the greatest factors in household comfort and convenience?

In this connection some very interesting facts are worthy of mention. The total amount paid for electricity by all the domestic customers in the United States is less than the amount paid in this country just for the privilege, alone, of buying gasoline. In other words, the total bill for household use of electricity is less than the combined state and federal taxes on gasoline.

As a matter of interest, note that the

gross sales of the Great Atlantic & Pacific Tea Company for the year 1933 was an amount nearly $150,000,000 greater than the 20,000,000 domestic customers paid for electricity in the same year. Yet that organization sells food only and is but one of a number of chain store companies selling food.

The New York *World-Telegram,* recently, called attention to the fact that the cost of food for the average family had increased $3.31 per week over the cost of two years ago. This increase in the cost of food, alone, is more than five times the average cost of electricity to the American household, which in 1934 was but 64 cents per week.

A cost which is of serious consequence to the American family is the cost of Government. This cost in 1934 is reported by the National Industrial Conference Board as being $489.59 per family. This represents the year's total of governmental expenditures in the United States. This is over fourteen times the family's bill for electricity. Or, to put it in another way, a reduction of but 10 per cent in governmental expenditures would pay the average family's electric bill and leave that family over $15 besides.

If we understand the views and the aims of the Federal Administration, its chief concern with respect to residential rates is that the homes of the country may use electricity more freely. As we understand it, the more abundant life includes—and of necessity embraces—a much more liberal use of electricity for lighting, cooking, water heating, refrigeration, and all those uses which add to comfort, economy and convenience in the home. This, too, has been and is the aim of the industry. It is the reason for promotional rates. It is the reason why your Committee, if you please, has asserted and reasserted for years past that promotional rates were a necessity for the continued well-being, prosperity and good public relations of the electric utility industry. We can point with pride to what has been accomplished by the industry, generally, in this respect. Those in the industry who have not adopted promotional rates, who have not made it possible for the residential customers to increase their use at a low price, must see the light and must take steps to correct the situation.

There is, however, continual agitation in many localities for the lowering of the rates to the small users. The reason for this is clear. These customers represent nearly 14,000,000 homes with probably twice that many voters. Every utility operator, every member of the engineering and rate staffs of the commissions of this country, every commissioner, and every investigator of residential rates in Washington or elsewhere knows that a very large percentage of these small residential customers are now being served at a loss. This has been demonstrated so many times that it need not be gone into in detail again. Yet, there is a continual drive and agitation by the politicians to still further cut the rates to these small users and thereby still further increase the proportion served at a loss. Here is a fundamental conflict between the aims of the Administration and the efforts of the politicians. One cannot eat his cake and have it too. The Companies cannot suffer continual reductions in revenues—they cannot serve an ever-increasing number at a loss and still be able to make the low promotional rates which are essential to successfully develop the residential business, increase sales, increase volume of output and reduce unit costs. This is self-evident. This fact would seem so clear that there should not be any need of saying anything more about it, but it is the situation we are confronted with. This continual pounding away at the rates to the small users is short-sighted and dangerous. It is effectually slowing up the efforts to promote more liberal use of electricity by low promotional rates. It is defeating the aims of the Administration and of the progressive electric utilities.

In order to accomplish the two-fold aim of preserving present revenues, or at least preventing their reduction to a dangerous point, and at the same time offering extremely low rates for liberal use of electricity, there has developed in the past two years the so-called "Objective Rate Plan." The first plan of this nature adopted was the so-called Commonwealth & Southern Objective Rate Plan made effective by Alabama Power Company in October, 1933. I described this plan in detail a year ago before this Institute. It has been described subsequently in various bulletins which are available to the industry. Other plans of the same character have been developed and put in force by a number of companies throughout the country. In Wisconsin, the Public Service Commission has ordered all the private and municipal plants of the State to work out and submit some objective plan for the Commission's consideration. The Commonwealth & Southern System has demonstrated its faith in its own plan by extending it to other units of its system. The Objective Rate Plan, or whatever you may want to call it and in whatever form it may be adopted, is simple in its purposes. First, it aims to maintain revenues as nearly as may be at their present levels; second, to make available to those customers who wish to increase their use rates which are decidedly low and decidedly promotional.

The two things cannot be accomplished by one rate, in most instances, because the low objective rate which is available for increased use, if adopted as the only rate, would so reduce revenue as to cripple, if not destroy, the company. Therefore, the plan includes two rates, or two features, either an Immediate Rate and Objective Rate, applied coincidentally, or an Immediate Rate with free current features added thereto where increased use is made of a discount for additional use. The Objective Rate Plan, we believe, has been subjected to such tests as to demonstrate its practicability, its good effect with respect to public relations and its business-getting power. It has the approval of a number of the State Commissions. We strongly recommend its consideration by the industry.

Like many good ideas, the Objective Rate Plan may be abused or misapplied. It cannot be worked out and applied successfully without careful consideration of the conditions confronting the particular company. Among the local conditions will be the cost of generation and distribution, and the competition which may be present. Upon the facts in each case must depend the rates themselves and their relation to each other.

We are too prone to judge the effect of rate revisions entirely by the resulting increases in consumption per customer. The reactions of the customers, the value to merchandising departments in selling more light and more appliances, these and other things should be taken into consideration in judging the efficiency and success of the plan. It will not be as successful in one locality or company as in another. The Plan, as you know, includes a so-called free-current feature. In some situations, at the particular time the Plan is put in force, it may be desirable to offer large amounts of free current for the larger users in order to expedite the sale of the large current consuming devices and thereby get the maximum results in the

shortest possible time. Again there may be and there are situations where it is better at the outset to offer more of the free current to the smaller and average customer with the idea that this particular field represents the greatest possibilities, particularly where cheap natural gas is available and the sale of electric cooking and water heating in large volume is difficult.

The practice of charging uniform residential rates throughout the entire territory served by a company, regardless of the size of community served, is quite widespread. It has the endorsement of many State Commissions.

To those who have uniform rates at this time or who may be contemplating the adoption of that system, we direct attention to a development which seriously endangers such a policy. Due to the unfortunate financial conditions in some cities, they have adopted local excise taxes or street rental charges against the electric utilities. In one instance, such a tax has been imposed of 15 cents per meter per year. Where uniform rates are in force over a territory comprising a number of cities and towns, it is obviously unfair that those localities which have placed themselves in unfortunate financial conditions should be permitted to compel the taxpayers of other and more efficient and better managed cities and towns to shoulder some of their deficits. This is what will result if the loading of utilities with local excise and street rental taxes is permitted. This practice, if not stopped, will ultimately wreck the whole uniform rate ideas. Where such taxes may be successfully placed upon the utility, then the customers in that particular community should be required to carry that particular tax in addition to the uniform rate for electricity they may be paying. Just within the last month, the Michigan Public Utilities Commission, confronted with such a situation, has held that if the placing of such a special local tax in one community is imposed by the City, and upheld by the Courts, the Commission will be compelled to raise the rates in that locality sufficient to offset the amount of the additional tax.

What has been said relates, primarily, to rates for residential service. That is the class of customers which has demanded most of our attention. A word, however, to both the utilities and the regulatory authorities with respect to commercial and power rates. In 1934, these two classes of service, comprising some 4,200,000 customers, paid to the electric utilities of this country over $1,007,000,000. In 1929, the peak year, these two classes of customers paid nearly $1,170,000,000 for electricity. During 1934, the domestic customers paid $677,797,300.

Let us not overlook the fact, nor permit others to overlook it, that the present low rates for domestic service have been made possible through the increased efficiency and lower unit costs brought about by the development of the commercial and industrial business. Domestic rates are directly dependent upon the volume of commercial and industrial sales.

Your Committee in the past has called attention repeatedly to the dangers and to the unfairness of rate comparisons as between companies and cities. Your Committee is pleased to note, in the last report of the Federal Power Commission, the following:

". . . Differences in charges may be ascribed to various factors, some of which can be remedied by company managements, while others arise from conditions over which they have little or no control. Such variables make it advisable to exercise some caution in making comparisons of rates between communities as well as between different types of service.

"Availability of fuel resources and accessibility of water power go far, in some instances, to explain differences in rate levels. Geographic and economic conditions have a marked influence as do the varying tax policies of the several states and cities. Density of population, seasonal requirements, presence or absence of large industries, variations in the purchase power of the people, and even climatic conditions may give rise to rate differences not otherwise explainable."

It has become quite popular in some quarters in the last two or three years to belittle and criticise state regulation of electric utilities. It is asserted that state regulation has failed. This criticism comes almost entirely from those who would substitute federal jurisdiction and federal regulation in place of state regulation.

If state regulation has failed in a few instances, we assert that such failure is due directly and entirely to politics. The pressure on the state commissions to reduce rates to the great mass of customers, using but a few kilowatt-hours, has been great. Some commissions have succumbed to this pressure as well as some utilities, also. Some have been shortsighted, but that is the failure of the individuals and not the failure of state regulation. Is there any reason to expect that the political pressure on a regulatory body in Washington will be any less than the pressure on state regulatory bodies in the respective states? Or is there any reason to expect that the character and ability and courage of those in charge of federal regulation will be of any higher type than of those splendid men who have stood their ground and who have fought consistently for regulation in a sound, constructive manner in the various states?

Regulation of public utilities must remain in the hands of the states if property values, which are the basis of the states' revenues, are to be preserved. If regulation gets out of the hands of the states, property values are likely to be destroyed and the revenues of the states will be most seriously affected. If the power to regulate local utility and other enterprises is surrendered to the Federal Government, the time will shortly come when the states will be merely poor relations of a dominant federal power.

Building Good Will

(Continued from page 200)

we must get the people to accept the truth as the truth when we tell it to them, and, secondly, to act intelligently in their own best interests. Unfortunately, it seems to be difficult for folks to learn by the experience of others and the only way they can be satisfied that fire will burn is to get burned.

We are here today because this wonderful country of ours was a land of opportunity for those great pioneers who conquered a wilderness with an axe in one hand and a rifle in the other. By their courage, fortitude and right thinking they overcame what appeared to be insurmountable difficulties; they, too, had to survive the oppression of government; they left us a tradition to preserve—let's preserve it.

In the achievements of our forefathers there is soul-stirring inspiration for the task which lies ahead. Let us all see to it that out of the ordeal through which we are passing there emerges a better public service with greater benefits to the people, and that we shall supply it because it is in the public interest that we do so.

The Institute publishes no formal "Proceedings." It is suggested that the E.E.I. BULLETIN be preserved as a Convention record.

Wheeler-Rayburn Bill vs. The Operating Electric Company

An Argument for the Defense

By George M. Gadsby

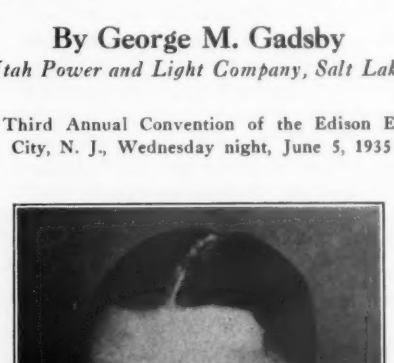
President, Utah Power and Light Company, Salt Lake City, Utah

An address before the Third Annual Convention of the Edison Electric Institute, Atlantic City, N. J., Wednesday night, June 5, 1935

MY appearance tonight is not as general counsel covering the entire case as presented by the anti-utility legislation, but only as a lay witness to tell in the words of an operating manager the threat against the operating company in the Senate and House Bills as they are now being considered. All references will be to Wheeler S.2796 as it was reported out of Committee on Interstate Commerce and Rayburn H.R. 5423 as introduced February 6, 1935. They will be referred to as the Wheeler and the Rayburn bills, respectively.

I believe my argument is in behalf of the main defendant, as a study of the bills and their genesis convinces me that the weakening and thereafter the socialization of the operating company is the real ultimate purpose of those who drafted this legislation. Laws already have been enacted which cover most of the items in the bill of complaint as set forth in the bills. The record of the hearings contains proposals for such changes and amendments to the Securities Act of 1933 and the Securities Exchange Act of 1934 as will fully cover the field of security regulation necessary to protect the investor in the future. An amendment to the Federal Water Power Act will fill the regulatory gap of interstate sales of power at the state line between non-associated companies and provisions for joint action between state commissions will provide for any other local regulatory situations which may not now be covered.

Suggestions of this character met with no approval on the part of the government employee drafters of the legislation. The reason, I believe, is because adequate control of holding companies and complete regulation of operating companies are not the objectives sought. The prompt abolition of the service company—Jan. 1, 1936, in the Rayburn Bill, and April 1, 1936, in the Wheeler Bill—to be followed by the 4½ to 6½ year destruction of the holding company is intended to break up the cohesive strength of the industry; thereafter the complete wiping out of private initiative and enterprise will be but a matter of time with the continued force of government competition crippling, striking down, then absorbing the operating companies one after another. And let none hope that any will ultimately escape.



MR. GADSBY

We can accept as a maxim the statement that once government in a proprietary capacity enters a field, it must and will finally occupy that entire field. The government is not, and by the very nature of things cannot be, a fair competitor. The TVA disclosures have destroyed any hope of fair competition or even an honest yardstick.

Government ownership advocates have long been active. The partial reports of investigations, omitting constructive features, have been used to injure the industry before the public. There is no need to discuss at length this phase as it is so well known to every utility operator. On the other hand, the national planners are striving for the erasing of state lines and state controls, substituting a national centralized authority which must inevitably have for its future support and continuance regimented thinking and regimented living.

In the Wheeler-Rayburn Bills these two streams meet. The Public Ownership advocates rejoice in the straight-jacket provisions, and the centralized authority theorists in the transfer of wide authority to the Securities and Exchange Commission and the Federal Power Commission. Local control of local service is at the beginning of its end in these bills. If any operating people have complacently gone about their business thinking that this legislation is a menace to the holding company alone, they will soon realize that Title I is but the shell barrage to crush the defences. The real capture, the actual attainment of the government employee objectives, will take place when the service and holding companies are gone, and through Title II the process of socialization is completed among the dismembered and disintegrated operating companies.

The strategy of the bills is—DIVIDE AND CONQUER!

In discussing this legislation with business acquaintances, I have at times been requested to tell in a few words what it is all about. After one or two attempts and after reading the condensates of others, much more able, I have come to the conclusion that we cannot put in succinct form, with a few paragraphs, the story of a program designed to change a successful 12 billion dollar industry, supplying at low cost an essential service to 24,000,000

customers in every city, town and hamlet of our fair land; to change, I say, such an industry to meet the legalistic, theoretic concepts of the brilliant academic minds which conceived the plan and embodied it in these bills. It is like attempting to write the philosophy of modern Russia on one typewritten page. So even to you who think and speak in terms of electric utility development, I can only delineate a few of the effects on our operating companies, and repeat that once put into motion, the flow of federal bureaucratic control into the entire electric industry can have but one overwhelming end—the c o m p l e t e nationalization of electric power.

With this introduction I shall proceed to the application of some of the more important provisions of the bills to the operating company.

As a specific illustration, the local companies by which I am employed are representative. In the years 1912-1915, a group of 30 or more small operating properties were purchased from their local owners. Financial difficulties among them were common, high rates prevailed, in the smaller communities the wires were "hot" only from dusk to dawn, interruptions were common. The larger places fared somewhat better, but the companies supplying them confined their activities to city customers and to beating off attacks of would-be competitors. There was no state regulation, and the rural consumer —if at all—was incidental. Into this situation came outside capital in the hands of men of vision and ability. After the local properties were acquired, new money, measured in millions of real hard dollars, were put into new plants, transmission lines, substations, distribution and service facilities. Reliable service was established and rates were reduced.

Now it so happened former owners of properties in Utah and Idaho which were incorporated in the larger integrated system also owned other property in Colorado. The stretch of desert between is too great to permit economical interconnection, so a smaller and independent system was of necessity acquired. The principal company was incorporated in Maine and qualified under all the applicable state laws to do business in Utah, Idaho and Wyoming. It acquired all the securities—stocks and bonds—of the separate Colorado Company and all the equity security in a traction company which owned the complete electric property in the largest city in the entire territory. The Colorado Company was too small for low cost self financing, and the traction company had a mortgage under which a relatively large amount of bonds were outstanding. So the largest and strongest company guaranteed the traction bonds, then placed all the Colorado Company securities and the traction company stock under its own mortgage, thereafter financing by selling to the public its own bonds and preferred stocks. This you will recognize as a typical situation, all legally and openly accomplished to the real advantage of the communities served as well as the public investors in the combined properties.

Now under the Wheeler-Rayburn bills what happens? The Utah Power & Light is by decree made a holding company although in fact it is primarily an operating company, 86 per cent of the consolidated companies' revenues coming from its own operations. There is no escape for any such company in the Rayburn Bill and even the restricted way out in the Wheeler Bill is closed. Wheeler Sec. 3(a) (2), (p. 18), does not apply, as it is not incorporated in one of the states in which it operates; the vague proviso in Sec. 11-b-3 (p. 45) won't save it even if both the FPC and the SEC should graciously decide to let it live, as it can scarcely be shown that "the holding company relation is necessary under the applicable state law." So it goes to the condemned row and on Jan. 1, 1938, (Rayburn Sec. 10-b-2 (p. 36); Wheeler Sec. 11-b-1 (p. 44) we must go to our trustee and request release of the securities of the Colorado Company and quite possibly also that part of the physical property of the Utah Company which is not geographically integrated with the main body but is supplied over intervening transmission lines of an affiliated but in no wise owned or controlled company. Under the indenture and deed of trust the trustee cannot release those securities and property unless other property, cash or outstanding bonds are substituted. This is impossible. So in a little over two years our Company is placed in a helpless impossible situation which opens the way for operation of Rayburn Sec. 10-C (p. 38) or Wheeler Sec. 11(d) (p. 46), whereby the SEC makes application to the Federal Court which forthwith takes exclusive jurisdiction and possession of the assets of the company. Next, by the mandatory provision of the Bills, the Court must appoint the applicant SEC as sole trustee to operate the property—and government operation has begun. A simple, swift and sure process.

Let me give you another illustration by quoting the effective parts of three sections of the Wheeler Bill. To make the case specific, I will again refer to my own company. Our mortgage requires the retirement of 2½ per cent of the face value of outstanding bonds at the end of each year. To meet this, bonds are purchased to whatever extent is necessary during the year with funds temporarily borrowed from our holding company. At the close of the year these bonds are turned in for cancellation. The Commission might hold that such borrowing or the use of our own cash would be an impairment of our working capital—after all, it's left entirely within the judgment of the Commission. Now watch the working of the bill, and I shall read only the actual language of the parts of the sections appertaining:

"Section 12(c). (p. 53)

It shall be unlawful for any registered holding company or any subsidiary company thereof . . . to acquire, retire, or redeem any security of such company, in contravention of such rules and regulations or orders as the Commission deems necessary or appropriate . . . to safeguard the working capital of public-utility companies.

"Section 18 (f). (p. 77)

Whenever it shall appear to the Commission that any person is engaged or about to engage in any acts or practices which constitute or will constitute a violation of the provisions of this title, or of any rule, regulation or order thereunder, it may in its discretion bring an action in the proper district court of the United States . . . to enjoin such acts or practices and to enforce compliance with this title or any rule, regulation, or order thereunder, and upon a proper showing a permanent or temporary injunction or decree or restraining order shall be granted without bond.

"Section 11(f). (p. 49)

If, in the judgment of the Commission, any registered holding company or any subsidiary company thereof is . . . unable to pay its debts as they mature, the Commission shall have power to institute proceedings for the reorganization of such company under Section 77B of the Act of July 1, 1898, entitled 'An Act to establish a uniform system of bankruptcy throughout the United States' as amended. In any proceeding pursuant to this section or in any other proceeding in a court of the United States, whether

under said section 77B or otherwise . . . in which a receiver or trustee of any such company or any assets thereof is appointed, the court shall have jurisdiction to appoint a trustee or receiver, and, at the request of the Commission, shall have power, and it shall be the duty of the court to constitute and appoint the Commission as sole trustee or receiver."

Oh, no! This is not just a holding company bill!

Right here let me make this general observation. The opportunities for most operating companies to escape the penalties provided for the holding company are slim at best and then only at the will and during the good pleasure of the SEC and the FPC. Keep in mind that federal bureaus over the years have not been inclined to lessen the scope of their activity and authority. Quite the opposite.

Rayburn Sec. 10 and Wheeler Sec. 11 are both entitled "Simplification of Holding Company Structures." These sections apply to every registered holding company and subsidiary company thereof, so most of us will come under these provisions and be "simplified." This surgical simplification by which arms, legs, and finally corporate life itself are to be removed, leaves little else of importance to discuss. Six and a half years pass so quickly, and then because of conditions created by these Bills, which now seem impossible to meet, our entire operations become a job for the Federal Court and the SEC.

However, for the purpose of this discussion, let's be *simple* now, and ignore the death sentence. How else will these Bills effect us during the period of our reprieve?

As an electrical industry we have a big job ahead. The type of job we relish—a constructive work embracing the nation in its scope. For years we have envisioned average residential use of 1000-1500-2000 kwhr. Even during the depression we have not stopped, and when business history of this period is written, the Electric Refrigeration Activity from 1931-1934 will stand a shining mountain of achievement. Our same hard-hitting, intelligent Company people can do the next big job of use building, air conditioning and further extension of the fine work already done in rural electrification but we must have new money—lots of it.

The principal sources for new money to which we have been accustomed, i.e., institutional investors and direct sales of securities in our local territories, are not now available. The depression and more lately fear of government competition and legislative destruction have dried up the new money streams in utility fields, so we can only look to our holding companies for funds to carry us through this period—which in the normal course of events will be but temporary—and the holding companies by and large have not and are not failing to meet this responsibility. Money is being provided for such extensions and betterments as the public requires.

Under this proposed legislation this last source of private capital will be dammed the day the legislation becomes effective. Faced with the necessity of liquidation, the holding company management must act for that army of investors—great and small—who have put their money into holding company securities. As a result of the new law, funds available will have to be conserved and loans collected. Advances for permanent property can no longer be made. The operating companies will of necessity be called upon to meet their obligations to their holding companies. No other private lenders will loan the large amounts currently needed to care for the industrial advance—the first stirrings of which are now becoming so evident. Power is too essential to permit postponement and the demands must be met. The only answer will be the government and so a socialization of the industry will be under way along still another course.

Now let me call attention to the next major development. In both bills Title I prescribes a process of dissolution which is apparently graduated over a few years, but Title II becomes effective immediately. Federal regulation will begin at once, there is no waiting period for the end of local control; and the recasting of our physical properties to fit into the schemes of the national planners will be under way forthwith.

The general declaration of policy is found in Rayburn Sec. 213 (p. 103), and the Wheeler Part II, Sec. 201, para. (a) (p. 116) I will read from the Wheeler Bill.

As to regulation, Senator Wheeler in his Committee Report on S.2796 dismisses the maintenance of State control with this paragraph — "O. EFFECT ON STATE LAWS. In order further to insure the autonomy of State commissions, the committee has provided in Section 21 that nothing in the title shall exempt any public utility company from obedience to the requirements of State regulatory law." Fine! But what does his bill say? Sec. 21 tells the true story (p. 81).

So the day this legislation as now before us is approved, the federalization of local control is under way.

Again let me quote from the Wheeler Report:

"2. The General Purposes of Title I.

This title is concerned only with holding companies in the public-utility field, defined for the purposes of the title as companies which 'control' operating public-utility companies. Title I does not eliminate any operating utility company or regulate it in any of its operating functions. It deprives no operating company of any property or facility; it destroys no values."

Apart from the fact that most operating companies automatically become holding companies under the Wheeler Bill, or are caught by Title I as subsidiary companies, I call your attention to Part III, Sec. 316 (p. 150)—and also to Title I, Sec. 21, which I have just read. This sequence must give supreme jurisdiction to the SEC and with the wideness of its scope it is my opinion that our every corporate act will be subject to the SEC or FPC either by direct provision of the bills or by enforced conformity with their subsequent rules and prerequisite conditions to be contained in future certificates, permits, and licenses. The authority is there and if experience teaches anything we know it will be exercised. Such is the purpose of the bills.

Time and your patience will not permit a complete discussion of every feature of these bills as they affect the operating company, and in my limited knowledge I am not capable of tracing out the full import of the intricate pattern which they weave; but very briefly I will point out a few of the other direct and immediate consequences.

Rayburn Sec. 204(a) (p. 107) will give the FPC a large measure of control over future industrial development in our various territories. In mining, large industrial, and even future agricultural development, power is determinative. It is within the authority conferred by this section for the FPC in its broad assignment of the present or future public convenience and necessity, to go beyond consideration of electric utility affairs and rule upon an application for a transmission line or facility extension on the ground of its (the FPC) conception of general public convenience and necessity as affected by the

enlargement of the industry to be supplied. For example, suppose the national planners decide cotton should be processed in Alabama, then there will be approved no more power extensions to supply new spindles in New England; or again suppose that viewed internationally they conclude that this country is producing as much copper as it should, then no new lines can be built to develop more copper mines. Thus a controlling grip is obtained over industrial development, one section against another, or the so-called planned economy against the exercise of the will of a free people. And in view of attempts made in recent years to control by centralized authorities the destinies of all the people, who will say that such construction of this section of the bill is too fantastic?

Another far flung extraneous power over non-utility concerns is contained in Rayburn Sec. 215 (page 121)—and Wheeler Sec. 15(d) (pp. 66-67). If and when this power conferred upon the FPC is invoked—who will do business with us? Outside concerns will not willingly submit to commission prying on the scale here set forth, and it requires no stretch of imagination to conceive the vendors of goods and services so limited that utilities will have to pay more for what they buy and be greatly restricted in the selection of firms with whom they can deal. It is not within my assignment to discuss the motives back of the "reaching-out" provisions of this character.

Many companies operating in the more sparsely settled parts of the country rely upon the Service Company for specialized activities and advices. These services cover a wide range from the recent preparation of the involved applications for permanent registration of our securities on the Stock Exchange, to the design and installation of a spray pond to tide over the effects of a drought reduced condensing water supply.

The cost of these services is subject to present scrutiny and control by our state regulatory authorities both as to value to the receiving company and cost to the associated supplying company. U. S. Supreme Court decisions of the past few years have established such right, regardless of the location or state of incorporation of the Service Company.

The results to date of the coordinated experience and skill in the Service Company organization have made it possible for the operating companies in the more thinly populated states to bring to their towns, villages and rural territories, the same high quality of service, at no greater cost than prevails in the average of the large cities.

By Wheeler Sec. 13 (p. 56) the Service Company is abolished on April 1, 1936, and by Rayburn Sec. 12(a) (p. 46) such companies must cease on Jan. 1, 1936. None but the so called mutual service companies are to be permitted thereafter, and these can be formed only upon approval of the FPC to do such things and in such manner as the FPC shall determine. The power is so broad that the FPC can control even the personnel of the service company staff.

While on this subject I am moved to wonder why the drafters of this legislation allowed up to 6½ years for dissolution of the holding companies, but struck down the service company almost at once; unless the intent is immediately to weaken the smaller operating companies. In any sense of fairness the so-called mutualization of service companies should await the final determination of the location, extent and area of the later-to-be-patched-up "geographically and economically integrated" systems, so both the companies and the FPC might know what companies may mutualize and form their cooperative service organizations. There is no apparent logic or reason for the four or five year gap between the immediate destruction of the service company and the final dissolution of the holding company.

Shakespeare said: "There is a destiny that shapes our ends." Well, if this legislation is enacted, there will be a Federal authority that will shape our whole figure! The present electrical power pattern is all wrong, so our national planners are going to melt it down and recast it in molds of their own designing.

After having isolated the operating companies into self-contained units, the bills next provide for incorporating them into reintegrated systems planned by the Federal designers in Washington. This is not a matter for the future. True, Rayburn Sec. 29 (p. 75) and Wheeler Sec. 30 (p. 89) direct the FPC to make studies and investigations of public utility companies, the territories served or which can be served, the manner in which the same are or can be served, and to determine the sizes, types and locations of public utility companies which do or can operate most economically or efficiently in the interest of the public, the investors and consumers; and thereafter the FPC shall publicly recommend the type and size of geographically and economically integrated public utility companies which can best promote and harmonize the interests of the public, the investor and the consumer. There can be no serious objection to an investigation and report. If the companies are ultimately to be reshaped corporately and geographically, a lot of careful, intelligent investigations should come first.

Unfortunately, that's not the whole story, or even the important part of it. Rayburn Sec. 203 (pp. 105 and 106) directs the FPC "to establish regional districts for the control of the production and transmission of electric energy, including interchange of energy, interconnection of facilities, and determination of the uses to be made of the facilities in such districts," and Wheeler Sec. 202 (pp. 118-120) directs the FPC "to divide the country into regional districts for the interconnection and coordination of electric facilities. Each such district shall embrace an area which, in the judgment of the Commission, can economically be served by such interconnected and coordinated electric facilities." In both bills these sections become effective upon approval of the bill. An investigation may be made later, but the plastic surgery starts at once.

To accomplish these ends and to permit the more rapid development of the government owned systems, both bills provide for making existing interstate transmission lines common carriers. I am familiar with the assertions that the amended Wheeler Bill does not contain the Common Carrier clause. Let me read from the report submitted by Senator Wheeler with his bill (S.2796), page 19, paragraph C.

Let's look at the bill—Sec. 202(c) (p. 120), lines 6 to 18. Now a shortage of market for Government surplus power from TVA, Bonneville, Grand Coulee, Boulder Dam, Casper-Alcova, Fort Peck and other huge plants under construction or in prospect, may well be construed by the FPC to be an emergency due to "other causes" and a "temporary connection" be ordered to transmit this power and sell it in existing private company markets "to serve the public interest."

Even the Wheeler report admits this is but the "first exercise of Federal

power over electric companies." The temporary steel tower or type H high voltage lines once constructed by order of the FPC at the expense of the private company is the first step. The next is a much shorter one when the FPC makes the connection permanent and compels the closing of existing private power sources so the government plants may find an outlet for their energy upon such terms as the FPC itself finds to be "just and reasonable."

And the same bill in its strange preamble (Sec. 1(b) (8) (p. 4) condemns public-utility companies because they "often enter into transactions with affiliates in which the absence of arm's length bargaining operates to the detriment of investors and consumers." Can that be worse than operating in competition with tax built government plants at strong arm's length of a Washington Commission with power at will to close its grip about the throat of the hapless private operating company?

If you doubt the application of Sec. 202, let me point out another place where the drafters of this bill have hidden poison ivy in the woods. Cutting through the trees of extra words, Sec. 207 (p. 129), reads as follows:

"Whenever the Commission, after a hearing had upon its own motion or upon complaint, shall find that any . . . practice or facility of any public utility, or the method of production, transmission, or supply employed by it, applicable to or used in supplying any service subject to the jurisdiction of the Commission is . . . improper, inadequate or insufficient, the Commission shall determine the . . . proper, adequate, or sufficient . . . practice, equipment, appliance, facility, or method to be observed, furnished, constructed, enforced, or employed and shall fix the same by its order, rule, or regulation."

So we are right back to the original provision with the authority vested in the FPC to order extensions at the expense of the private company, but for such purpose as the FPC, upon its own motion, may determine, including common carrier use for government power.

In passing, let me note much confusion exists in the public mind as to the use of transmission lines as common carriers. A group of engineers recently aptly covered this point as follows:

"When production and use are of necessity simultaneous, the common carrier theory cannot be put into effect without detriment to service. Railroads and pipelines handle bulk movements of tangible things. Storage is possible to greater or less degrees and it is not necessary to have movement and use exactly coordinated. In the case of electricity there can be no storage, there can be no delay in delivery, but at the moment of use the transference of energy at the generating plant must take place and its transmission from that point to the point of use. This very fact has controlled the engineering and construction of the systems of every company, and for effective service they must be completely under the control of one central load dispatcher. The common carrier theory can only be accomplished by such an enlargement of facilities as will probably be uneconomical. Certainly any such plan should have preliminary to it exhaustive studies and the economics thereof determined."

* * *

To summarize—these bills make possible, and I believe are designed to reach the operating company and to incorporate it into a Washington controlled socialized power system by—

(a) Breaking down the strength and cohesiveness obtained through the holding company.
(b) Weakening the companies in sparsely settled areas by outlawing the service and management company.
(c) Drying up the only present source for new money now available to the smaller companies.
(d) Precipitating managerial and financial receiverships with SEC thereafter in charge as sole trustee or receiver.
(e) Federalizing actual control over operations and of necessity over rates.
(f) Reclassifying and reshaping the operating territories, inevitably to the advantage of the tax built government operated systems.
(g) Enforced incorporation of existing systems into the government owned national super power plan.

Finally—Exit the private operating company.

I cannot leave the rostrum with such a dismal picture held before you. I agree with the ringing words of the president of our Institute delivered here yesterday morning: "Be of good cheer—fight on." There is no demand for this legislation from the taxpayers, from State authorities, from consumers, from investors, or from company employees. They are united against it. No one supports it but government employees who either want to try out new theories without cost or responsibility to themselves, or who want a nation-wide expansion of Federal departmental power. The purpose of the bills—original and revised—is becoming identified with the authors, and the American people—to say nothing of the Supreme Court—will not abide it.

The President's Address

(Continued from page 181)

legislation. In the maelstrom of legislation which is under consideration in Washington, it is difficult for this committee, or anyone else, to focus the attention of Senators and Representatives, generally speaking, upon the merits or demerits of such legislation. It has become involved in the vortex of politics and, under such circumstances, the real merits or demerits of legislation are not always considered.

Whence comes the demand for this legislation? At neither the hearings before the House Committee nor the Senate Committee did any consumer or any investor, or any citizen other than the Corcorans, the Cohens, and the other hirelings of the Government appear in its favor. On the other hand there has been seemingly a universal voice of protest against it from the companies themselves; from investors; from insurance companies, who are large holders of our securities; from savings banks; and from fair-minded citizens generally. What is it all about? I will not bring myself to speak in any terms of disrespect of the President of the United States, but I do not think I go too far when I say that he seems to have an obsession on this subject. If I may say so without offense, I think the great mistake of his administration is trying to combine too much reform, that needs to be carefully digested before enactment, with recovery—the need for which is instant. I make bold to say that this attitude of the adminstration with reference to this particular industry is doing more harm to recovery, generally speaking, than all the expenditures of money and other palliatives coming out of Congress are doing good. And that if the administration would announce that this kind of thing was to cease, and that Government from henceforth would attend to its own proper activities, and give business a chance to come back, recovery would blossom as do the roses at this time of the year. If the Government, however, is to persist in its attitude, it is up to the industry to fight for its life. The kid glove stage has passed!

So far as my own company is concerned—which fortunately is rather happily situated, as it is but a single integrated system—I will stand upon the bridge to the end and go down if need be. But our ship will not sink and neither will yours. Justice and truth are upon our side, and the right will prevail. Therefore be of good cheer!

The Effect of the Wheeler-Rayburn Bill on Operating Utility Companies

By Jack G. Holtzclaw

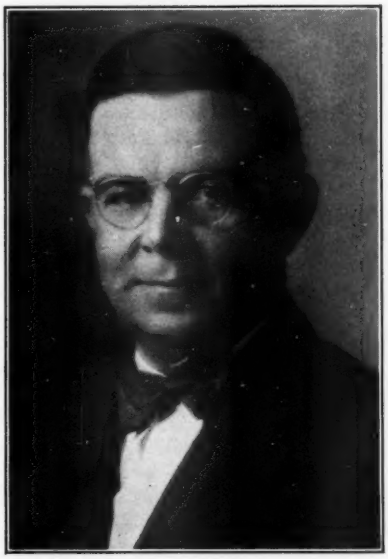
President, Virginia Electric & Power Company, Richmond, Virginia

An address before the Third Annual Convention of the Edison Electric Institute, Atlantic City, N. J., Wednesday night, June 5, 1935

PILED high on the desks in our offices at home, we have every manner and kind, dissection and discussion from and by executives, lawyers, editors, investors and Brain Trusters, concerning the effect of the passage of the Wheeler-Rayburn Bill on the utility industry in America. In addition, we have the Congressional publications containing the thousands of pages of testimony before the Committees of both the House of Representatives and the Senate, and the filed statements of witnesses who did not appear in person. To read and digest even a substantial part of this mass of information is a hopeless task, and yet I am sure it has afforded many hours of interesting study for all of us who have attempted to follow the proceedings during the past three months.

We, out in the field, take off our hats in sincere admiration for those gentlemen of the Committee of Utility Executives who have remained on duty in Washington throughout these trying months, and who have unselfishly given their entire time and a magnificent effort, to the end that those upon whom the responsibility for this drastic legislation rests shall not be able to claim in years to come that they did not realize that its passage would be so far reaching in its destruction of private investment, and that they, as the chosen representatives of the people of democratic America, did not understand that they were responsible for the enactment of her first real legislative step toward State Socialism. How discouraging it must have been to you during the last days of the hearings, when you realized that the lowest criminal on trial for his life can force judge and jury to sit for months to hear his plea and his defense, and yet you, representing millions of consumers, investors and employees, on trial for the life of this industry, were forced to tell your story and make your plea to a minority of the Committee who came and went as pleased the individual.

If you have even casually read the statements that have been filed and the



MR. HOLTZCLAW

testimony that has been presented in person by the outstanding men in the electric industry in America, you have been impressed, I am sure, by the candor of the statements, by the frank admission that many things have been done that should not have been done, and would not be repeated, law or no law; that legislation to correct and prevent such ill-advised action in the future is welcomed; that Federal regulation and supervision where State Governments are unable to act is most desirable; that this industry, which represents one of the outstanding accomplishments in the industrial and engineering history of America, welcomes and invites rigid regulation to fill all the gaps that exist in order that it, as one of the most natural of all natural monopolies, may continue to serve the American people, with their enormously increasing demand, without fear of financial strangulation, nor the wild hope of fabulous profits, but that its investors of every class may hope for, at least, the right to continue to earn a reasonable return on the fair value of the property which represents their savings.

You have been impressed that no claim of lily-white business behavior has been made, despite the fact that testimony to the contrary from the opposition would indicate a devilish aptitude on the part of utility magnates to rob, pillage, sack and burn, and then to artfully cover their misdeeds with a whitewash of propaganda, or to lull the public, both customer and investor, to the sleep of false security with soft words in the press and lying figures on the balance sheet.

I doubt if ever a more one-sided case was prepared, upon the foundation of which a devastating piece of legislation was to be proposed, than the case against the utility industry as prosecuted by the Federal Government through its various Commissions and Bureaus. Certainly there must be some good in the industry. There must be some claim to a "good job well done," and something done right to offset some of the crimes of which it is accused and against which this legislation is directed. But, true though this be, this *ex parte* investigation has not disclosed it to the public, nor to those in Washington who are our judge and jury today.

The super-crime of which this entire industry has been accused and found guilty is the politically unforgivable crime of *success*. The immortal Emerson wrote to the effect that "if a man write a better book or preach a better sermon or build a better mouse trap, though he build his home in the wilderness, the world will make a beaten path to his door." He might well have added, certainly as concerns corporate success, that the world may be expected to bring along a police officer and an investigating committee, to ferret out the dishonesty that made success a possibility.

There *is* one thing in our favor, which we know and over which all of us can rejoice, regardless of the outcome of this or other political persecution, and that is that our customers have not been the complainants at any stage in the proceedings. It must be that they, twenty-two million strong, are not and have not been up in arms. That seems about the

only consolation left, so make the most of it and be contented in its truth.

Now, to revert to that pile of papers, briefs and documents on my desk and yours. I again doff my hat to the Committee in Washington and express what I know is the feeling of every executive in the Nation—the thanks of all of us, that we in the field have been kept so interestingly informed as to what was being done to tell the utility story to those who sit in judgment under the dome of the Capitol.

It is a proper assumption, I am sure, that every man, and many of the ladies present, have read and heard of the effect of the Wheeler-Rayburn Bill on both holding and operating companies. It is a proper assumption, I suppose, that every man and woman here tonight is associated with the utility industry or some corollary industry, and many of you, being executives, have already discussed the legislation with employees, friends and the public in general to such an extent that a further discussion with you is a very exaggerated case of "carrying coal to Newcastle." However, on the assumption that there be some among you who do not already know as much about it as I know, I shall give you my ideas of the effect of this destructive legislation on our operating companies.

Since a large majority of our operating companies are part of a holding company system, we are vitally interested in both Title I and Title II of the proposed Act. You are all familiar with the fact, I am sure, that the Act is divided into two major parts; Title I, relegating authority over holding companies to the Securities Exchange Commission, and Title II, by amendments to the Federal Water Power Act, granting to the Federal Power Commission almost unlimited powers over all operating companies.

It is very difficult to say which of these two titles affects us as operating companies most, each is so thoroughly a part of the other. The operating company is the kernel of the nut, so to speak, the holding company is the shell which preserves and protects the kernel. Squirrels, in their effort to reach the kernel, are interested in the shell only insofar as its destruction is necessary in order that they may reach the kernel to devour it. Title I provides the grinding teeth for the destruction of the shell. Title II devours the kernel.

This holding company legislation has not been drawn in such murderous form because of past misdeeds of holding companies, nor because it is seriously thought that they are not economically sound business organizations. These are but smoke screens behind which a far-reaching program of Nationalization is being constructed. And since this is the objective, it has been so drawn because these holding companies today are the owners of a substantial majority of the public utility operating companies in the country, and so long as they exist in such capacity, it is not simple to break up and acquire the operating groups as easily as is desired by those who sponsor government control and operations. It is not a question of how much value the holding company is to the operating company from a technical, legal, engineering or other viewpoint. It is not a question of whether financing of the operating companies can be handled by a holding company to a better advantage. It is not a question as to whether or not the combined counsel and advice of those men in the holding company groups are of such benefit to the operating companies to justify their existence. Testimony to support all of these points has been ample to justify the holding company in each and every respect, but it seems evident that to a large extent it has fallen upon politically deaf ears—deaf because some do not wish to hear and understand, and deaf because of the knowledge that if heard and understood they cannot help but be inwardly convinced. The plan of those in power is to crack the shell of the nut and destroy it that the kernel might be devoured. From the viewpoint of us operating men, that is the tragedy of Title I.

Those of us who have been associated with holding company organizations during almost the entire period of their growth, realize the definite and positive value of the relationship. We cannot help but recognize the loss if this relationship should cease, and yet Title I, if passed as written or amended, will mean that in a few years, this relationship will definitely terminate and the families will be scattered to the four winds, so to speak—kicked out of the home in which they have been nurtured and have thrived and cast footloose upon the world to rustle for themselves and fight single-handed the enemies who will, unless the political complexion changes remarkably, continue to close in aggressively on all fronts. This setting of the stage for the conflict of the future brings us to the effect of Title II, because Title II plans the lines upon which the battle is to be fought and it gives to the enemy every salient advantage, leaving you without aid or ally and without even a small supply of ammunition.

You operating men are going to find yourselves answering this question: "Can I, if I have an opportunity, operate my company in the future without my holding company affiliations, as I have operated it in the past?" You will naturally answer this question in the affirmative, because there is nothing else left for you to do, and, if you are so fortunate as to be in charge of a well organized and financed company, operating in a large, prosperous, stable and reasonably conservative community, I have not the slightest doubt but that you and your board of directors can do a satisfactory job for the public and stockholders just as you have done in the past. Our holding company people lay no claims to being supermen, nor to any particular brand of genius, but they have been responsible, largely by the exercise of foresight, mental acumen and by process of business evolution in legally bringing together utility properties and groups of properties of every kind and character and legally welding them under centralized control into unified systems which, even though made up of profitable and unprofitable operations, may be a success. If you happen to be so *unfortunate* as to be in one of those unprofitable groups and your holding company support is removed I gravely fear serious consequences for the future. You have been able to keep going through good times and bad, due to the fact that you were a unit of a large group, but now that you find yourself standing on your own bottom, you face a situation which is, to some extent, foreign to your past effort and experience, and, in addition you find yourself hopelessly enmeshed in the web of Federal domination so carefully provided in the far-reaching provisions of this act.

You will find that the Federal Power Commission has been granted absolute authority to take control of the heart and arteries of your system, your power plants and your transmission lines—all of them—even though you may have only a very small portion of your business in another state. Those who drafted the Act apparently felt that all authority needed to accomplish its purpose would simply be that which would direct the Power Commission to tell the operating companies *what* they can do, *how* they can do it and *when* they can do it, in every major phase of the company's operations, so that with such all-embracing authority there can be begun the

building of a mighty nation-wide hook-up, in the operation of which the owners will have no voice. It is evident that the primary purpose, in the abolition of the holding company, lies in the belief that financial embarrassment of the operating units will force them later, in their distress, to seek Governmental aid, and thereupon to become easy prey in the scheme of Socialization. Just so surely as Title I of this Act is designed and destined to completely abolish most holding companies, just so certain will Title II result in the abolition of the operating utility as a privately operated, privately managed institution.

Just picture to yourself several years ahead, when the holding company has been abolished and yours is one of the many operating companies throughout the Nation which has been left on its own, to work out its own salvation. The Calendar of Progress has been turned back twenty years. You will find it necessary to revamp many of your operating methods and to resort strictly to local management with your officers and directors and without that most valuable, competent and efficient advice which has been yours during the past years and which has come to you based upon years of experience which date back to the very founding of the electric light and power industry. What are the major problems that will face you as an operating executive under these new conditions?

First, you have your policy of financing; second, the policy of growth and expansion in keeping with increased demands; third, the policy of relationship with your neighboring orphaned utilities; and, fourth, the policy of local operation and personnel.

In the matter of policy of financing, you will find that the Federal Securities Commission and the Federal Power Commission, as well as your own State Commission, must review and pass upon and authorize every piece of financing which is contemplated by your Company, either to refund existing indebtedness or to provide for the new money which is constantly necessary in the public utility business. You will find that the Federal Commissions have authority far greater, I believe, than most State Commissions have ever felt it necessary to seek. The Federal Commissions can completely exercise the function of management in this matter and are authorized to lay down the most drastically prohibitive rules as to the character of your future financing. The decision of the Commission as to the necessity of such financing and its purpose is final. You will find that your depreciation reserve, which in the past has been reinvested in your property, must now be placed in cash in a special investment fund, at interest if possible, and used only for such purposes and under such rules and regulations as the Commission may prescribe, and yet, if I recall it correctly, no serious charges of misconduct in financing have yet been aimed at the operating companies under holding company control, or otherwise.

As an operator of an independent utility, you will find in the matter of judicious expansion of your property, you are without the power to judge your course and that the prerogative of management has been taken away from you to the extent of having your property and investment used for the benefit of others without your consent. You will find that under H. R. 5243 "no public utility shall undertake the construction or extension of any facilities subject to the jurisdiction of the Commission, or acquire or operate any such facilities, or extension thereof, or engage in production or transmission by means of any such new or additional facilities or receive energy from new source, unless and until there shall first have been obtained from the Commission a certificate that the present or future public convenience and necessity require or will require such new construction, or operation or additional supply of electric energy," and further, that it is provided in S. B. 2796 that "the Commission is empowered and directed to divide the country into regional districts for the interconnection and coordination of electric facilities." In those drastic control provisions is set the trap which, when sprung, makes you simply a unit in a Federal system.

You and your board of directors will find that you cannot build or add to a power house or build a transmission line or make a contract with one of your neighbors without the Commission's approval, and you will further find that you are face to face with the impossible, in that your lines through "interconnection and coordination" or whatever names they may give it, have practically been opened to the public as a means of transportation, upon which a foreign kilowatt has equal rights with your own.

This matter of your managerial policy, which refers to the relationship with your neighboring companies and the buying and selling of power as occasions justify, is of utmost importance in these days in the interest of capital and operating economies and system protection. And yet, you will find that you must go to the Federal Government, your competitor, and stand by while they pass judgment upon whether or not contracts for additional supply shall be made either to buy from or sell to your neighboring companies any such surplus as each may possess, and they have the power to force interconnections that may be, in your judgment, both unwise and unsound. It is hoped, so says the Act, that these interconnections and coordinations may be arranged by voluntary agreement, but, if not, then that's where your Government steps in whether you like it or not.

There is no doubt as to the nature of orders which shall emanate from Washington as to these private contracts for interconnections and power supply. In providing "interconnection and coordination," your systems are removed from the jurisdiction of their owners and, though no such intent may be expressed, it is certain that the final outcome of the exercise of this authority will be to make use of the systems of your operating companies to load the gigantic power plants proposed or now being built with government money in the four quarters of the country; and this for the simple, though excellent, reason that there is no market elsewhere for the tremendous amount of power to be generated as a result of these Federal flood control, navigation, soil erosion, reforestation, social betterment, unemployment experimental yardsticks. Designed as "yardsticks," developed as "whipping posts" they will culminate as "stocks," in which will be pilloried millions of thrifty Americans, who have, in good faith, used their money and their energy to build this private business.

The next major policy of your management has to do with matters of a strictly local nature concerning local policies, operation and organization, and it is apparent that until the more important social phases of the matter are disposed of, you will be left with the power to govern your local operations under State Commission control. The matter of local rates and other local affairs constitute too small a part of the big picture to be of particular interest to the socially minded gentlemen who sponsor this act, for the simple reason that socially minded people or nations seldom look to the interest of the individual, but rather to their concept of

the interest of the state or the party, as the case may be. However, it is still probable that since such a strong influence will be exerted over your Company from governmental sources in every other respect, it will not be very long before this influence will be definitely felt even in matters of minor importance in the operation of your property.

There will not, therefore, be much left to the discretion of your management and your board of directors. The experience, skill, knowledge and incentive of private management will have been entirely superseded by bureaucratic order out of Washington, which, unfortunately, cannot possibly have the color of conditions concerning local operations which would make for decisions of wisdom. Is it humanly possible for any group to decide quickly and wisely all cases which will of necessity arise throughout this entire country in this rapidly growing and expanding industry? Is it not true that one of the principal causes of the collapse of some utility holding companies was just this mistake that our Government now seeks to duplicate? Can there be any possible result except strangulation of enterprise and stagnation of progress?

You, as the operator of a local company, will find yourself in the position of the henpecked husband who was asked who was the boss at his house and replied, "My wife always gives all orders to the cook, the hired man, the children, the dog and the cat, but I usually say pretty much what I want to say to the canary bird."

Reasonable regulation, or shall we say stringent regulation, to protect the public from any type of abuse is always in perfect order. I wish that a holding company regulatory bill had been passed years ago. If it had been, you gentlemen would not have been spending the last three months in Washington defending your companies and fighting for their very existence. If such a law had been passed, it might have prevented the abuses practiced by some in the past as a result of which a blanket verdict of guilty and death is about to be pronounced against all.

Maybe it is wise that active, responsible private management be superseded by inanimate government bureaus without responsibility. Maybe it is necessary in the great scheme of things, now in dramatic experimental stage, that the individual initiative, individual effort and individual energy which have built this business from zero up in half a century be cast into the discard. Maybe that is true, but no citizen has gone to Washington representing either customer or inventor to tell Congress that the American people demand such a change.

Whether such is the case or not, I submit to you that this Act is a significant step in that direction and that Title II is of more importance in that respect than Title I, except that Title I, by virtue of the abolition of the holding company, prepares the way for Title II to become thoroughly and more rapidly effective.

To sum it up, Title II will give the Federal Government complete control of practically every power plant of magnitude in the United States and every transmission line connecting up all those power plants. With these large interconnected systems and all sources of generation under Federal control, there only remains the appointment of a coordinator or a director general to make the entire system nationalistic in every respect. The situation will become closely analogous to the taking over of the railroads of the country in the early stages of the World War, except that it is not intimated that the Federal Government will undertake to be responsible for such damage to investors as may be incurred by virtue of the arbitrary use of its power to regulate and even to destroy.

This Act, in plain language, provides that the Federal Power Commission may commandeer the facilities of private utility companies and subject the private investment therein to such rules and regulations as the Commission in its judgment may deem best in the public interest. It authorizes the Commission to practically junk private management and privately owned property, if they see fit, and without a word as to the effect that such action shall have on the interest of the owners of the private property, and further, despite the fact that not yet has any serious criticism been aimed against the operations, services, efficiency or the ability of the operating companies to carry on as presently constituted and operated.

Perhaps the Act may be greatly amended before it finally becomes a law; perhaps some of the dire consequences which I have mentioned may be completely eliminated from the prospects which you finally have to face, but as it exists today it will produce the results I have presented to you and contains possibilities that are not one whit less than the worst that I have stated. Whether or not such possibilities were the intent of those who drafted the bill does not matter. They are there and are such that can, without further change or strengthening, bring about the almost immediate nationalization and socialization of the electric light and power industry in America. There is nothing new in what I have told you; there is nothing that has not been said and repeated to the public and to the men who are responsible for this legislation. This industry is at the crossroads and you in this room tonight who have built it must stand idly by, pitifully powerless in the midst of indecision to direct its course beyond this date.

Rate Making by TVA

(Continued from page 220)

the reservation contained in the Tenth Amendment, has exclusive authority. If the Tennessee Valley Authority within this State is engaging in a proprietary adventure, unrelated to any power conferred upon it or on its principal by the Constitution, then it is doing an unauthorized thing. Engaging in the business of producing and selling electric power, as a utility, it would become subject to State regulations, and likely be in competition with private utilities, or with the State or its municipalities, while so engaged. It is contrary to the genius of our dual government that the national government should do business in a proprietary capacity, of an internal nature, and not related to a constitutional power, within the limits of a State, and occupy extensive areas of territory therein for that purpose. It would be fraught with possibilities of collision between such governments and individuals. The Tennessee Valley Authority, if the averments of the bill are sustained, is engaged in producing and selling electric power in Alabama, in an enterprise having no substantial relation to the improvements of navigation or any constitutional power, on an elaborate scale, building dams designed for maximum electric power production to increase surplus power; fixing rates and terms in displacement of State functions, with the declared purpose to increase the magnitude of the enterprise in the future. This is not a plan involving only the disposing of surplus electric power necessarily created in the improvement of navigation of the Tennessee River."

Accident Prevention

(Continued from page 203)

tures and other equipment, mainly elevators and boilers, is essential. Insurance companies think so well of accident prevention that they spend millions of dollars a year in research and investigation of the hazards confronting their assureds.

A form of accident prevention that is occupying the attention of cities, states and government, as well as insurance companies, is the automobile accident prevention program. Like other forms of insurance, the cost of automobile insurance definitely depends upon accident experience and even in this field, such large buyers of insurance as fleet owners, bus lines, truck lines, etc., have definite programs designed to keep down the accident cost as well as the insurance cost.

Since accident prevention work is steadily growing and has been growing for some years, there can hardly be any doubt that it has proved its worth to both the purchaser of insurance and the insurance companies.

Subsidized Electric Plants

By H. W. Fuller

Vice-President in Charge of Engineering and Construction, Byllesby Engineering and Management Corporation

An Address before the Fourth General Session of the Third Annual Convention of the Edison Electric Institute, Wednesday morning, June 5th, 1935.

SUBSIDIZED electric plants may be defined as those which receive, in one form or another, benefits which other plants of the same character do not receive.

These subsidies may be either direct or indirect.

Direct subsidies take the form of loans and grants by the Federal Government.

The loans always carry a low interest rate.

The grants are an outright contribution and may or may not be given in connection with a loan.

Indirect subsidies take many forms and are often not discernible without special study.

All state, county and municipal plants are benefited by indirect subsidies in varying degrees.

These subsidies are:

1. Low rate of interest.
2. Less working capital required.
3. Freedom from exacting requirements.
4. Relief from general administrative expenses.
5. Accounting methods not standard.
6. Relief from taxation.

The greatest of the operating subsidies is the comparative freedom from taxation.

Speaking very generally, the taxes on commercial electric plants in the United States for 1935 will not be far from 15 per cent of their gross revenue.

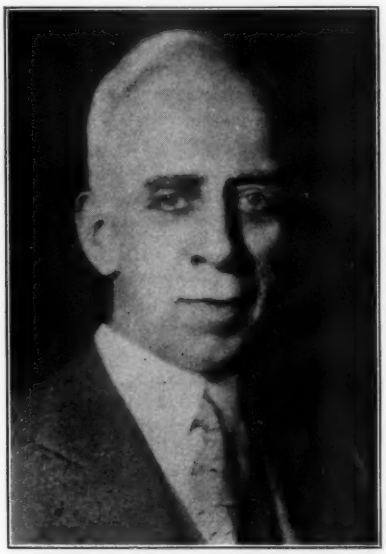
Nineteen thirty-three taxes on five commercial electric companies in Canada averaged 5.5 per cent of their gross revenue.

The average taxes on political utilities will not be more than 2.5 per cent in 1935. They averaged 1.07 per cent in 1932.

We have no data on the average percentage of taxes paid by municipal plants since the year 1932, but we know there is now a tendency to exact higher taxes from such plants.

Some of the benefits that are conferred on municipally owned and operated plants from the six kinds of indirect subsidies mentioned have been estimated and are shown by Table I. .

Chart 1 shows a comparison of the



MR. FULLER

taxes paid by commercial and municipal plants during the last thirty-odd years.

The taxes paid by commercial electric utilities are shown in dollars and as percentages of gross operating revenue.

Two hundred and forty-five million dollars was paid in 1934, or 14.1 per cent of the gross operating revenue.

This same chart shows the taxes (expressed in per cent of gross earnings) paid by municipal plants—when the information could be secured. It is impracticable to show their taxes, in dollars, on a chart of this scale.

The taxes paid by municipal plants in 1902, the first year of which we have record, were $10,120.

They increased gradually until 1932 when the total of all taxes paid by municipal plants was $1,292,229 and this amount was 1.07 per cent of their gross operating revenue.

In the same year, the commercial utilities paid almost $204,000,000 in taxes—11.73 per cent of their gross.

I call attention to one significant fact not developed by this chart because gross revenues are not shown, namely:

Taxes paid, in dollars, by commercial electric utilities increased 92 times in the period between 1902 and 1934.

Gross revenues of all such electric companies, in the same period, increased about 22 times.

Therefore, the ratio of their taxes to their gross income has increased over 4 times.

Despite their many advantages, the municipal plants have shown a noteworthy decrease in number, especially in the ranks of those which generate their own current. This is shown by Charts 2 and 3.

A report by the PWA furnishes data for the year 1933 and makes it possible to state that there has been no material change in the number of municipal plants in that year.

While the number of municipal plants has shown a marked decrease since the peak of 1923, the total installed capacity showed a continuous and rapid increase until 1930. Then the increase almost ceased and we find a decrease in 1933.

Table II shows the distribution of public electric plants by states as of December, 1933.

The impetus given municipal plants by the attitude of the present Federal administration and the loans and grants by the PWA from the $3,300,000,000 fund will, however, not add materially to the number of municipal plants.

The first PWA report, February 15, 1934, showed allotments for and to 335 non-Federal political plants.

A third report from the PWA on the distribution of the $3,300,000,000 fund, as of April 20, 1935, is now available and has been summarized in the last two columns of Table III.

The decrease shown, from 335 to 99, was due to:

(a) Unwillingness of municipal authorities to accept terms and conditions imposed by PWA.

(b) Adverse results of elections required for approval of bond issues.

(c) Opposition of privately owned utilities whose market would be confiscated.

Ninety-seven projects for new municipal, county and state electric plants or

TABLE I—COMPARATIVE SUMMARY STATEMENT ILLUSTRATING THE FINANCIAL ADVANTAGES OF A MUNICIPAL ELECTRIC PLANT OVER A COMMERCIAL ELECTRIC PLANT

	Electric Plant	
	Municipal	Commercial
Cost of plant	$3,000,000	$3,000,000
Working capital	50,000	80,000
Total dollars required	$3,050,000	$3,080,000
Gross annual revenue	600,000	600,000
Est. at 20% of cost of plant		
Operating expenses (35 per cent of gross)	210,000	210,000
Excl. of depreciation and taxes		
Depreciation:		
Municipal plant	75,000	.....
Commercial plant	.....	75,000
Taxes:		
Municipal—2½ per cent	15,000	.....
Commercial—15 per cent (1935)	.....	90,000
Total operating expenses	$ 300,000	$ 375,000
Net earnings	300,000	225,000
Interest on money:		
Municipal—4 per cent	122,000	.....
Commercial—6½ per cent	.....	195,000
Balance	$ 178,000	$ 30,000

for additions or improvements to existing plants have actually been financed by PWA funds. Only 43 of these will compete with established private companies. The total of the loans and grants to these 97 projects is $25,064,596.

The statements and figures to this point have been confined to municipal, county and state electric plants which are recipients of both indirect and direct subsidies.

Power Districts

There is one other class of electric project in the so-called non-Federal group, the power district plants, which have not as yet been numerous.

The two outstanding ones at this time are in the state of Nebraska. They received a handsome allotment of $14,800,000.

The developments proposed — and now in progress—are so out of the ordinary in many respects that it seems wise to describe and illustrate them.

> A special law, passed by the Legislature of Nebraska in 1933, was necessary to make possible the PWA loans.
>
> The irrigation and power districts created by these laws have no power of taxation, but can pledge their revenues and properties. If they do not pay out, Uncle Sam will have them on his hands.

The Loup River project—strictly a power development, shown in Chart 4—has been examined by commercial companies a number of times during a long period of years and always has been turned down. A most liberal grant and 4 per cent money on the loan enabled the PWA to figure this project as self-sustaining.

The project consists of a number of reservoirs and 35 miles of canals to create a total head of 126 feet for the operation of two hydro plants with an installed capacity of about 40,000 kw., which at a 50 per cent load factor, should produce 140,000,000 salable kilowatt-hours.

The original plan called for 66 kv. transmission lines, which would not satisfactorily serve an area greater than 17,680 square miles.

The communities in the area have been reported as 185, and 34 of them are served by municipal plants.

The sales in this area during 1934 are reported as 464,180,000 kwhr, and 1935 sales, estimated, will show a 4 per cent increase. This development, when completed, could supply almost one-third of the market.

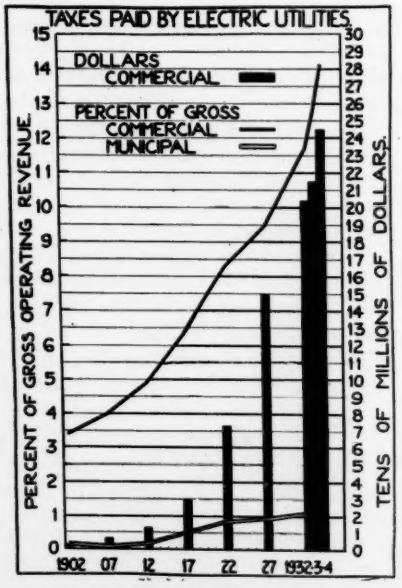


Chart 1

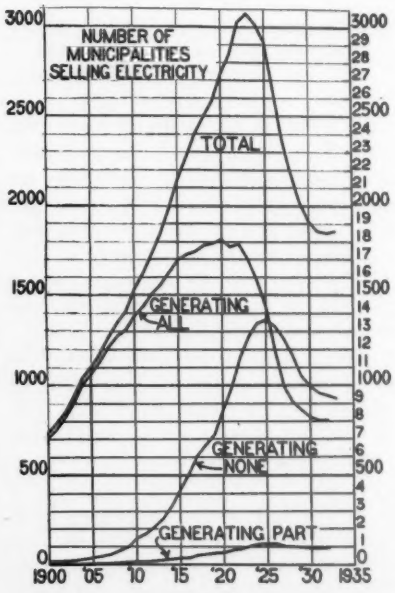


Chart 2

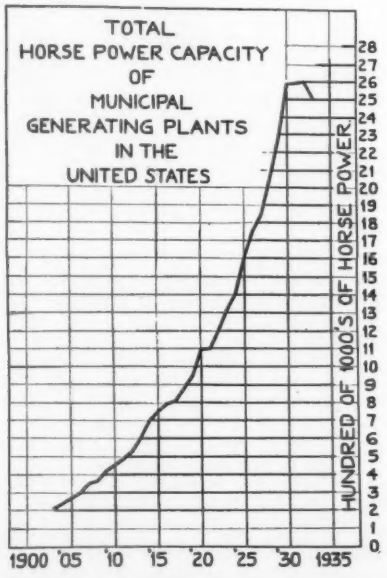

TOTAL HORSE POWER CAPACITY OF MUNICIPAL GENERATING PLANTS IN THE UNITED STATES
HUNDRED OF 1000'S OF HORSE POWER
1900 05 10 15 20 25 30 1935

Chart 3

The second Nebraska project—known as the Sutherland project, shown in Chart 5—irrigation and power, is even less defensible economically than the Loup River project just mentioned.

Neither is it as great a menace to commercial electric industry, for the proposed installation of 24,000 kw. will produce only 94,000,000 salable kwhr at 50 per cent load factor.

> The electric "pickings" in the central part of Nebraska are pretty thin and this plant, when completed, will be able to supply about five times the present demand for electrical energy within a radius of 75 miles.
>
> Information from individual operations in this area indicates that the kwhr sales in 1934 were 18,645,000 with the possibility that 1935 will show a 10 per cent increase.
>
> There are but 17 communities served by 9 commercial companies and 10 communities served by municipal plants in this area.

Over three-fourths of the output of 94,000,000 kwhr from this plant will have no present market in the limited area.

Unless the local market grows with unexampled rapidity, the Federal Government will have another project to support, or the rates for irrigation will have to be raised—and that is unthinkable.

Later plans propose an interconnection between the hydro-electric stations of the two projects and a considerable mileage of 115 kv. transmission line.

> This will increase the area to be served about 28 per cent.
>
> The apparent object of the interconnection is to firm the electrical output of the combined plants without sacrificing water needed for irrigation under the Sutherland project.
>
> Incidentally it will increase the market for the excess kwhr that can be generated by the hydro-electric plant of the same project.

The combined, salable output of the three hydro-electric plants of these two projects—234,000,000 kwhr annually—will be about one-half of the 1934 sales of the commercial utilities in this area. It will require a long time to find a market for all energy available in the enlarged area.

We now have a total allotment of $39,864,596 to 99 non-Federal electric projects.

We know that since July 1, 1933, about $765,000,000 has been allotted by the PWA to non-Federal projects (exclusive of railroads) and that some $260,000,000 of this sum represents grants or gifts to over 4000 projects. We can congratulate ourselves that the loans and grants to non-Federal electric projects were not greater.

The column shown in Table III reporting the applications, by states, for allotments to non-Federal projects as "under study"—totaling in excess of $362,000,000—should be "a call to arms."

The new program of non-Federal construction has fixed $900,000,000 (without any restrictions as to amount of grants) as the limit—20 per cent more than the first program—and the executive committee of the "Construction League of America" has recommended the following schedule of diminishing grants for the allotments under this fund:

> Fifty per cent grant to projects when work thereon is undertaken prior to December 31, 1935.
>
> Thirty per cent when work is undertaken prior to December 31, 1936.
>
> Twenty per cent thereafter.

If this recommendation is adopted, the result should not be so bad, for the construction of but few of the projects will be under way by the end of this year.

The Administrator of the PWA has apparently broader ideas, for some weeks ago he said that he would recommend a

TABLE II—SUMMARY BY STATES OF PLACES SERVED BY MUNICIPAL, FEDERAL, STATE, COUNTY, ETC., PLANTS

State	Municipal Plants Having Plants	Municipal Plants Purchasing All Energy	Federal, State, County, or District Plants
Ala.	3	13	1
Ariz.	2	2	
Ark.	13	2	
Calif.	6	16	5
Colo.	25	10	
Conn.	3	6	
Dela.	5	2	
Fla.	26	8	
Ga.	18	35	1
Idaho	4	11	1
Ill.	44	16	
Ind.	37	47	
Iowa	59	68	
Kan.	68	71	
Ky.	7	3	
La.	25	6	
Me.	6	2	
Md.	4	3	
Mass.	9	51	1
Mich.	36	14	
Minn.	50	72	
Miss.	24	3	1
Mo.	42	11	
Mont.	3		
Neb.	75	92	
Nev.	1	2	
N. H.	2	5	
N. J.	5	6	
N. Mex.	2		
N. Y.	19	35	3
N. C.	15	41	1
N. D.	13	3	
Ohio	48	70	
Okla.	39	35	
Ore.	6	4	
Pa.	19	21	
R. I.		2	
S. C.	3	22	
S. D.	34	15	1
Tenn.	14	2	
Tex.	34	1	1
Utah	18	15	
Vt.	9	8	
Va.	11	7	1
Wash.	6	15	1
W. Va.	2	2	
Wisc.	35	50	
Wyo.	5	2	4
Total	934	927	22

Source: P.W.A. as of Dec. 31, 1933.

TABLE III—SUMMARY BY STATES OF PWA LOANS AND/OR GRANTS FOR NON-FEDERAL ELECTRIC PROJECTS

State	Allotments Feb. 15, 1934	Allotments Apr. 20, 1935	Applications Under Study
Ala.	16	4	8
Ariz.	3	1	
Ark.	10	1	5
Calif.	6	2	5
Colo.	3	1	3
Fla.	10	1	3
Ga.	6	1	3
Idaho	3		2
Ill.	16	6	12
Ind.	5	3	2
Ia.	17	4	3
Kan.	7	8	3
Ky.	1	1	
La.	10	1	7
Me.	1		1
Mass.	8	6	
Mich.	8	2	4
Minn.	16	5	3
Miss.	3		
Mo.	29	8	8
Mont.	3		1
Neb.	14	6	1
Nev.	0		2
N. J.	1		1
N. M.	5	1	
N. Y.	5	5	1
N. C.	1	1	4
N. D.	6	1	8
Ohio	14	6	7
Okla.	23	6	11
Ore.	10		2
Pa.	8	2	4
R. I.	1	1	
S. C.	7	1	3
S. D.	1		1
Tenn.	4	1	14
Tex.	19	4	
Utah	6	1	3
Vt.	2	2	
Va.	7	2	4
Wash.	5	1	3
W. Va.	1		
Wisc.	5	2	3
Wyo.	9		3
Total	335	99	149

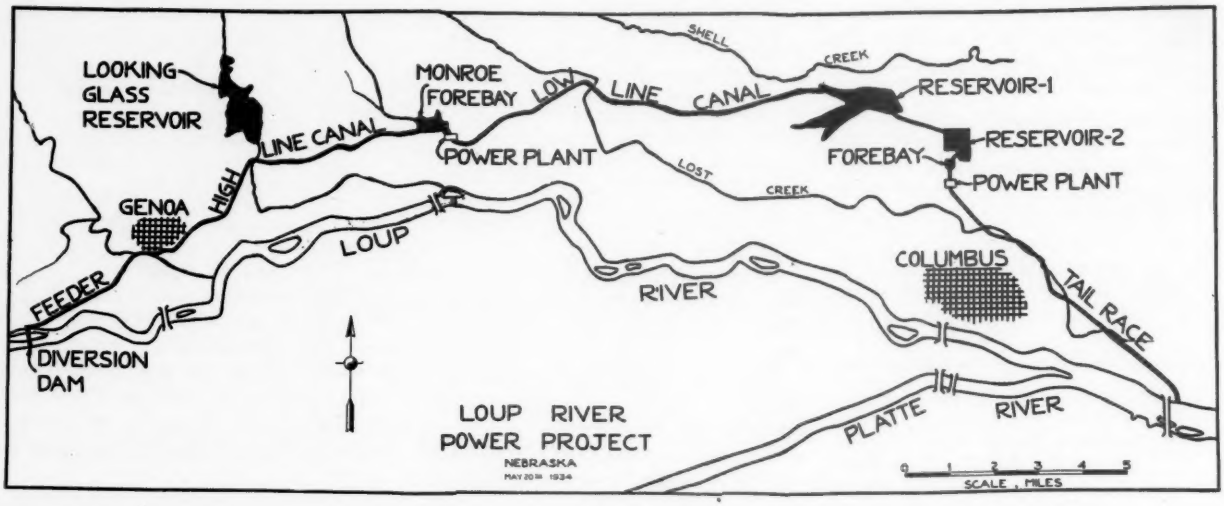


Chart 4

new loan and grant policy of "50 per cent grant and 50 per cent loan" with interest on the loan of 3.7 per cent in place of the 4 per cent effective in the past.

A recent newspaper article states:

> "President Roosevelt boosted the outright grant maximum to 45 per cent of the cost of a project and reduced to 3 per cent the interest to be paid on the additional 55 per cent loan."

Should either one of these announced policies as to grants and the rate of interest on loans become effective, it will be impossible for a commercial electric company to compete with non-Federal electric plants receiving such a subsidy.

The constitutionality of a loan and grant of Federal funds to a municipality has been put squarely up to a district court of the United States.

The opinion of the Supreme Court in the Schechter case, pronounced on May 27, 1935, was that Section 3 of the National Industrial Recovery Act is unconstitutional.

Loans and grants for non-Federal works are made under the provisions of Section 203 of the same Act. The language of this section is open to the same objection as that of Section 3 in that it is a "virtually unfettered" grant of authority. Section 203 is open to the further objection that these loans and gifts are not in furtherance of the enumerated constitutional powers of the United States and are, therefore, illegal.

We have good ground for hoping that this high-handed method of attacking our business will be prohibited by the Supreme Court.

Subsidized Federal Electric Projects

There are six major subsidized electric projects now in progress. These projects are claimed to be principally for the benefit of "flood control, navigation and/or irrigation." The public statements that appear from time to time, however, dwell mainly on the water power that will be produced.

However much we may question the wisdom of expenditures for a navigation that does not exist and, to judge by long experience, will never come, or for the irrigation of lands when crops on other lands are being plowed under, or for the subsidized development of electric power in sections of the country served by commercial companies, we must admit that flood control may be necessary in some regions and that expenditures for that purpose may be justifiable if they bear a reasonable relation to the amount of damage that has been caused by the unrestrained floods.

There has been so much heated discussion concerning the above Government-financed projects that it would seem wiser not to enter this controversial field. But there is one angle that has only been touched, namely, the pres-

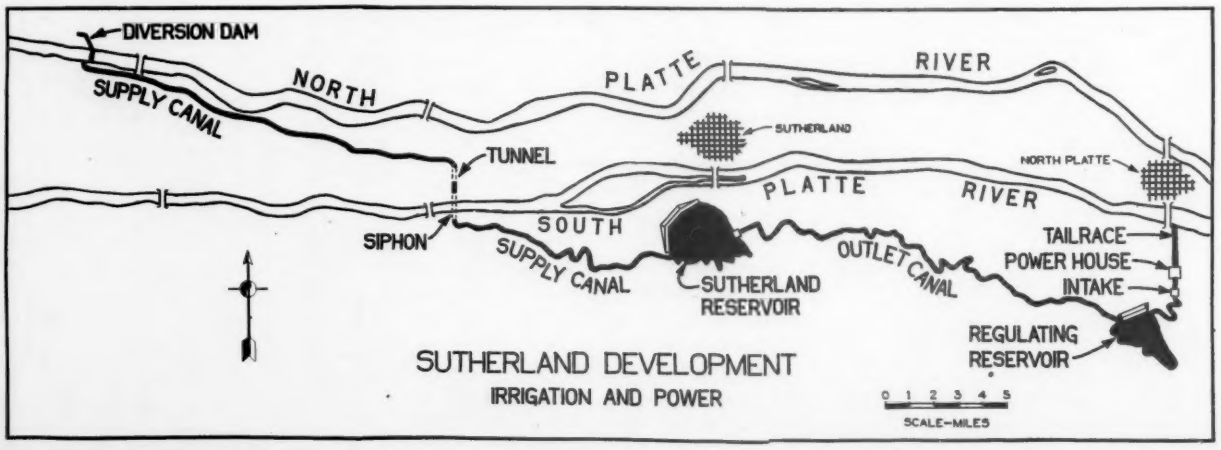


Chart 5

ent and immediate market for the output.

The plans for the ultimate development of most of these projects are very indefinite as to capacity, transmission, and area to be served.

For this reason, the facts to be presented today are based on the

(a) Plants completed or well under way.

(b) Capacity to be immediately installed.

(c) Areas, selected by the writer, that can be reasonably served by these plants when they are placed in service.

No attempt has been made to determine the generating capacity of the commercial plants now serving the selected areas—the many interconnections make such a determination almost impossible.

As a basis for the comments hereafter made, a definite attempt has been made to determine the kilowatt-hour sales in each area and an estimate of the anticipated sales in 1935.

In figuring the ability of these subsidized plants to produce kilowatt-hours for sale to the ultimate consumer, it has been assumed that

1. All generating, transforming, transmission and distribution equipment of these subsidized plants will be available 8760 hours in each year.
2. Transformation, transmission and distribution losses will average 20 per cent.
3. The annual load factor will be 50 per cent.

Four of the six projects have been discussed for years. The remaining two were conceived by the "New Deal."

The projects are named as follows:

Boulder Dam—Colorado River.
Tennessee River.
Columbia River.
Casper-Alcova-Seminoe.
Fort Peck—Missouri River.
Quoddy.

Sketch maps have been prepared to illustrate the Tennessee (Chart 6) and the Columbia River projects (Chart 7).

Boulder Dam is too well known to need illustration.

Casper-Alcova is, at present, out of the picture because of serious difficulties in the matter of water rights.

Fort Peck is nothing more now than a tremendous reservoir.

Quoddy has been adopted so recently that, as yet, its exact form is uncertain.

The National Power Survey—just completed by the Federal Power Commission—predicts a "shortage of electric generating capacity" in many states, totaling 4,000,000 kilowatts, following "a resumption of normal industrial activity."

No mention is made of the large capacities now advancing to completion under the stimulus of Federal subsidies.

Is it possible that this opinion of the Power Survey was worded so as to furnish some sort of justification for the expenditures on four of these Federal projects?

Boulder Dam

This dam, finished two years ahead of schedule and to be ready to turn out power one year from now, is a serious problem to those commercial companies and municipalities who contracted for a large part of the electric output.

This project—bitterly fought several years ago—differs from the New Deal projects in that it will yield advantages which could be had in no other way.

Flood control of the Colorado River is a definite benefit to the Imperial Valley.

A control of water used for irrigation in the Imperial Valley is of some value.

A dependable supply of water for municipal purposes is a requisite for the future growth of Los Angeles and other nearby communities.

The electric energy to be produced is a mere by-product and has been, or will be, sold to the commercial companies and municipalities for distribution and sale by them to the ultimate consumers.

Note, please, that this energy is to be sold to, and not in competition with, the commercial companies.

The initial delivery of energy will be in bulk to a receiving substation located near the immediate market—over a double circuit 275 kv. transmission line 266 miles long, having an operating capacity of 240,000 kw.

Sixty-four per cent of the estimated ultimate four and one-third billion kw.-hr. of firm power per annum was contracted for by municipalities, commercial companies and one "water district," all in southwestern California.

The balance (36 per cent) is under option to, but not contracted for, by the states of Arizona and Nevada.

There will also be about one-third as many kilowatt-hours of secondary power available each year.

All allottees in California for this power, except three municipalities now petitioning for delays, take this firm power on a percentage basis, increasing each year until the end of the sixth year following the first generation of power.

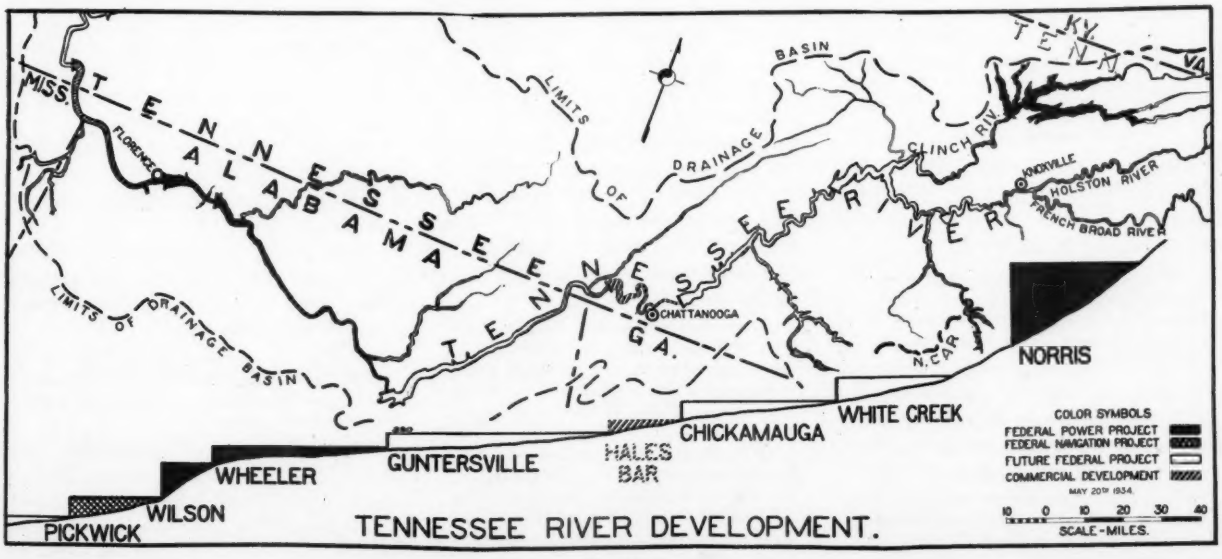


Chart 6

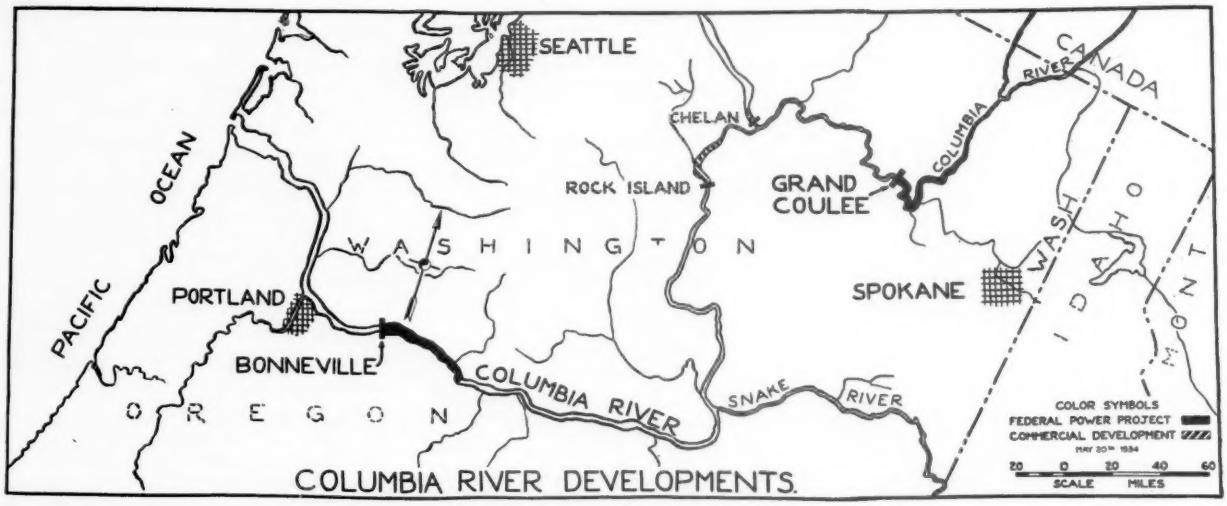


Chart 7

The requirements of the several allottees in 1934 totaled about 3,850,000,000 kwhr and the estimated increase for 1935 is 3 per cent.

The initial installation of 370,000 kva. at Boulder Dam — 28 per cent of the ultimate installation—should be able to produce about 1.2 billion kwhr for delivery to the allottees, or 30 per cent of their requirements in the first year of operation of the Boulder plant.

Note, please:

1. The total present generating capacity of the allottees in California exceeds slightly 1¼ million kw.

2. The ultimate installed capacity at Boulder Dam has been placed at 1,054,000 kw., with 80 per cent power factor.

Arizona and Nevada will have difficulty in finding a market for their share of Boulder Dam power so that the market in California must grow considerably if the output from all this capacity is to be absorbed.

Tennessee River

The most publicized Federal development is that of the Tennessee River, known with all its ramifications and side issues, as the TVA.

Please note the change—by Federal Government—in the method of disposing of the energy to be generated as compared with that adopted for Boulder Dam power.

Subject to certain conditions, the TVA will sell direct to a municipality for distribution by that municipality.

The PWA—first cousin to the TVA—has loaned money to one city, in debt to its eyes, to build a distribution system for retailing TVA power in competition with an existing commercial company.

In order to find a direct market for its output, the TVA has purchased—or attempted to purchase—transmission and distribution lines from commercial companies. It has also constructed new electric lines to further this program.

One Federal Judge—who does not fear the crack of the Administration whip and is not politically interested in the distribution of the $4,000,000,000 fund—has placed a monkey wrench firmly in the gears of the Lilienthal-Morgan machinery.

It is to be hoped that the Federal Judges who will be called to review his action will see and affirm the justice of his decision.

The Constitution of the United States may be out-dated in the estimation of the New Dealers, but to many of us it is still sacred and we do not expect Federal officials to ignore or deliberately violate it.

The three developments—one completed and two to be ready in June, 1936—on the Tennessee River, with their initial installed capacity of 332,000 kw., may be expected to produce 1,165,000,000 kwhr for sale to individual consumers in an area of 136,000 square miles—all of Tennessee with parts of seven contiguous states, and just touching two more (Chart 8).

This territory — according to McGraw-Hill—contains 626 communities, each of which is now supplied either by one of the 52 commercial companies or by one of the 41 municipal plants in this area.

The commercial companies' reports show service to 894 communities.

The kilowatt-hours sold in this area during 1934 totaled 2,612,441,000 and the commercial companies and municipal plants predict an increase for 1935 of 10 per cent.

If the TVA elects to increase the installation of generating units at Wheeler Dam to 128,000 kw., then their Tennessee River developments may be expected to generate annually energy which can supply 1,500,000,000 kwhr to ultimate consumers, or 60 per cent of the 1935 requirement, with Pickwick (just started) to be heard from.

There is no possible way of finding a market for any considerable part of the output of these developments without pirating the commercial companies.

Columbia River

The Columbia River offers ultimate power possibilities of 8,000,000 kw. and an annual output of 41 billion kwhr.

The improvement of this river for flood control, navigation and irrigation does not appear now to be economically sound.

One sizeable development has been made by a commercial company at a favorable site, and the Government is now working on two sites.

Bonneville (86,400 kw.) ready by the middle of 1937.

Grand Coulee (102,900 kw.) ready in the fall of 1937.

The initial development at Grand Coulee will be restricted to a dam creating a head of 152 feet. The ultimate head is to be 351 feet.

With this limited head (152 ft.) and installation (102,900 kw.), Grand Coulee can generate 360,000,000 salable kwhr annually.

Between Coulee and Bonneville there is a fall in the river of about 850 feet, only 50 feet of which has been developed.

Bonneville is near the best present market and, with its head of 62 to 64 feet and initial installation of 86,400

kw., should be able to develop, for sale, about 300,000,000 kwhr annually.

These two initial installations will supply about 660,000,000 kwhr for sale to ultimate consumers in this territory.

The territory which can be served includes all the state of Washington, about 40 per cent of Oregon (northern part), a part of northerly Idaho, and just a very small bit of Montana—in all some 114,000 square miles (Chart 9).

In this territory will be found 273 communities now served by 52 commercial companies and 18 served by municipal plants.

We know that the 1934 kilowatt-hour sales in all communities in this area totaled about 2,420,400,000 and that 1935 sales are estimated at 2,500,000,000. Compounding this yearly rate of increase until Bonneville is ready for service gives a possible annual sale at that time of 2,650,000,000 kwhr.

The commercial companies should be able to absorb the output from the initial installations by 1942, if it is offered to them at a price no higher than their present increment killowatt-hour cost.

Other Projects

Perhaps I should not even mention the Casper-Alcova-Seminoe project—because:

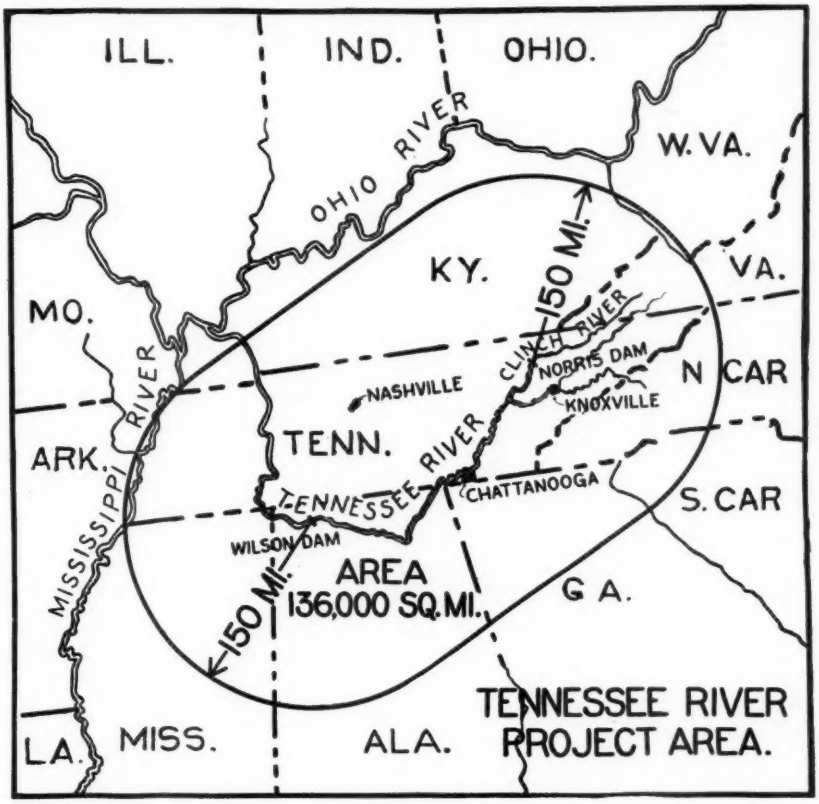


Chart 8

Chart 9

1. It is located in a desolate part of Wyoming.
2. The expenditure contemplated is small compared with other indefensible Federal projects.
3. A dispute as to water rights has put a stop to the work and may kill the project.
4. The proposed electric installation is small—30,000 kw.—and a considerable part of the energy will be required for pumping for irrigation.

Nevertheless, this small plant will generate more than the energy required by the 14 communities and one important oil field and refinery within the tributary area of 17,680 square miles.

The kwhr sales in these 14 communities in 1934 aggregated 31,000,000, and a 10 per cent increase is hoped for in 1935. The oil field and refinery used 43,500,000 kwhr in 1934 and anticipate a smaller use in 1935.

Fort Peck (in northeastern Montana) is mentioned because it has been said that a hydro-electric plant of 50,000 kw. capacity will be installed here later.

The project as now authorized is to create a large storage reservoir for regulating the flow of the Missouri River for navigation purposes between Sioux City and St. Louis.

Many millions have been spent to promote navigation on this part of the

river and, so far, these expenditures have been unproductive.

$80,000,000 has been allotted for the Fort Peck reservoir, and the engineers say $100,000,000 will be needed.

It seems doubtful whether even a stable and deep channel during the low water season will generate enough traffic to justify this tremendous cost.

There is practically no market for power in the vicinity of the dam. The thinly populated territory is now served by a commercial company.

The Passamaquoddy project as originally conceived (about 1920) covered a tidal water power affecting the St. Croix River and Passamaquoddy and Cobscook Bays in Washington County, Maine, and lands and waters in the Province of New Brunswick, Canada.

It was planned to create an operating head of 13 feet and, with a flow of 300,000 c.f.s., to develop 2,500,000,000 kw.-hr. annually.

As now modified so as to secure an allotment of $30,000,000 from the PWA, the project is to be confined entirely to American waters and the estimated output therefrom has been reduced to 250,000,000 kwhr, with a peak capacity of 45,000 kw.

It has been stated that the PWA will justify its loan and make the project appear to be self-sustaining by charging:

$10,000,000 to relief work.
$10,000,000 to national defense.

Previously named subsidized Federal projects are bad, but this one is the last word in futility and extravagance.

In what precedes, I have, as far as possible, given you facts and we have looked "at the record," a record with which most of you are probably familiar in a general way. If I have been able to serve you at all, it has been by condensing and combining facts and figures and thereby bringing to your attention, clearly and emphatically, the evils and injustices under which we labor and the dangers that the future holds.

These facts and this record show an ever-increasing tendency on the part of government, local, state and federal, to deal harshly, and even unfairly, with our industry.

The New Deal policy of duplicating our established facilities and confiscating the markets created by our enterprise and our capital is, in plain words, piracy.

Objection by us as individuals, or as representatives of a corporation, to this actual and growing destruction of our property, by the use of money in part contributed by us, has, so far, done little to arrest this movement.

Our failure to make any real impression on the President and his numerous and obedient followers in Congress is probably due to the fact that we have not been sufficiently bold and active in our opposition.

It is not for me to decide, but I am sure that the correct policy must include frank and frequent appeals, not only to our security holders and employees but to the public.

It is necessary to tell the public, not once, but often, that a public utility corporation, like most other corporations, is not an impersonal and heartless monster, but an aggregation of ordinary citizens who have put their money together in the creation of facilities for the performance of a needed service in the hope that for this service the public will pay a fair but modest compensation, a reward that has not always been forthcoming.

This simple fact with variations should be told over and over again to our security holders and employees and, with their help and by means of radio talks, advertisements and addresses before clubs, boards of trade and the like, efforts must be made to make people understand what we are and to appreciate the dangers which the present policies of the New Dealers threaten to every kind of private business and to all invested capital.

Let us show that we are not satisfied to be the football of the selfish and designing. If there's any kicking to be done, let us be the kickers and not the kicked.

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CONVENTIONS AND MEETINGS

JUNE

3-6 EDISON ELECTRIC INSTITUTE, Hotel Traymore, Atlantic City, N. J.
17-18 Accounting and Business Practice Section, Northwest Electric Light and Power Association, Portland, Ore.
19-21 The American Society of Mechanical Engineers, Hotel Gibson, Cincinnati, Ohio.
24-26 American Society of Heating and Ventilating Engineers, Toronto, Can.
24-27 National Association of Cost Accountants, Statler Hotel, Boston Mass.
24-28 American Society for Testing Materials, Book Cadillac Hotel, Detroit, Mich.
24-28 American Institute of Electrical Engineers, summer convention, Ithaca, N. Y.
26-28 Canadian Electric Association, Algonquin Hotel, St. Andrews-by-the-Sea, N. B.
27-30 Eighth Session of the Conference on Large High Tension Systems, Paris, France.

JULY

1-6 Eighth Session of the Conference on Large High Tension Systems, Paris, France.

SEPTEMBER

3-6 Illuminating Engineering Society, Netherland Plaza Hotel, Cincinnati, Ohio.
18-28 National Electrical and Radio Exposition, Grand Central Palace, New York.
23-27 American Transit Association, Atlantic City, N. J.